



VOL. XXX.

CLEVELAND, O., NOVEMBER 17, 1904.

No. 20.

LAUNCH OF BATTLESHIP NEW JERSEY

The battleship New Jersey, building by the Fore River Ship Building Co., Quincy, Mass., was successfully launched on Thursday last. There was a large number of guests present, including Gov. Franklin Murphy of New Jersey, Gov. John L. Bates of Massachusetts and ex-Secretary of the Navy John D. Long of Hingham, Mass. The battleship was christened by Mrs. William D. Kinney, daughter of Gov. Murphy.

The invited guests came from Boston by a special train, which was run into the ship building company's yards on a spur track. Besides the New Jersey party, Rear Admiral Harris of Washington, Rear Admiral George F. Wilde, commandant of the Charlestown navy yard; Com'dr Boutakoff, naval attache of the Russian Embassy at Washington, and Congressmen McNary, Powers and Tirrell of Massachusetts were on the train.

The river about the ship building plant was filled with boats, and as the new ship took the water a great salute was given her by all the craft and by the whistles of near-by manufacturing establishments. After the launching the guests were entertained by the Fore River company, Rear Admiral Francis T. Bowles, president of the company, acting as host.

In March, 1899, congress appropriated money for three sea-going coast-line battleships carrying the heaviest armor and most powerful armament for vessels of their class, and provided for two more by the act of June 7, 1900. The New Jersey is one of these. Her length on the load water line is 435 ft., her extreme breadth at load water line 76 ft. 2½ in., her trial displacement about 14,948 tons, and her mean draught at trial displacement about 23 ft. 9 in.

The New Jersey was built for a speed of at least 19 knots and will be propelled at this high speed by twin screws driven by two four-cylinder triple-expansion engines of about 19,000 I. H. P.

The New Jersey will carry four 12-in. guns mounted by pairs in balanced turrets, one turret being located forward of the superstructure and the other aft. Of the eight 8-in. guns which will be carried on this vessel, four will be mounted by pairs in turrets, superposed upon the 12-in. turrets above mentioned and four in two broadside turrets. In the New Jersey there will be a broadside battery on the gun deck of twelve 6-in. rapid-fire guns, fifty calibers in length, mounted six on each side.

The New Jersey will also be fitted with submerged torpedo tubes. The magazines will be especially fitted to enable her to carry, with absolute safety in all climates, the new smokeless powder. To make the warship's defensive qualities proportion-

ately great, she is provided with a complete water line belt of armor, 8 ft. in width amidships, 11 in. thick at the top, and 8 in. at the bottom, tapering to a uniform thickness of 4 in. at the ends of the vessel. She also has a casemate armored belt extending over about 245 ft. of her length, of a uniform thickness of 6 in.

It is proposed to make all of the vessels of this class flag-ships, and to do this it is necessary to make provision for the accommodation of one flag officer, one commanding officer, one chief of staff, nineteen ward room officers, ten junior officers, eight warrant officers, and a crew of 772 men, making a grand total of 812.

FERRYBOAT SAN FRANCISCO LAUNCHED

The San Francisco, the new ferryboat of the Key Route, was launched in Oakland creek at noon on Nov. 8, under the supervision of John W. Dickie, her constructor, and D. Hanlon, foreman of the yard. Her dimensions are as follows: Length, 200 ft.; beam, 35 ft.; depth, 17½ ft.; tonnage when machinery is in place, 900; indicated horse power 2,000. She will be ready for service next March. Her cost is \$175,000.

She is intended to assist the ferryboats Yerba Buena and San Jose in conveying passengers on the Key Route line across San Francisco bay. Being built sharper and having more horse power she will surpass both of those in speed, making 14½ knots against their 11½. She has balanced engines, which are said to be new on the Pacific coast, and is expected to be the fastest ferryboat on San Francisco bay.

STEAMER MAINLANDER SUNK NEAR SEATTLE

The Pacific Coast Steamship Co.'s steamer Mainlander collided with the tug Sea Lion on the evening of Oct. 27 and sank off West Point lighthouse, four miles to the north of Seattle. The Mainlander carried sixteen passengers and a crew of thirty; and went down in twenty minutes. The Sea Lion rescued all those on board the steamer. The Sea Lion was towing the British ship Celtic Monarch up Puget Sound and the Mainlander was returning from Bellingham, in a fog so dense that it was impossible to see a ship's length ahead. Both vessels had their fog-horns at work and each heard the other plainly. The Mainlander was at a standstill and was backing slowly when the Sea Lion collided with her, knocking a hole in her port side. The tug, after taking her tow to Ballard, came back and tried to tow the Mainlander ashore, but failed. The Mainlander was valued at \$100,000 and was insured heavily.

DECIDES AGAINST PACIFIC MAIL STEAMSHIP CO.

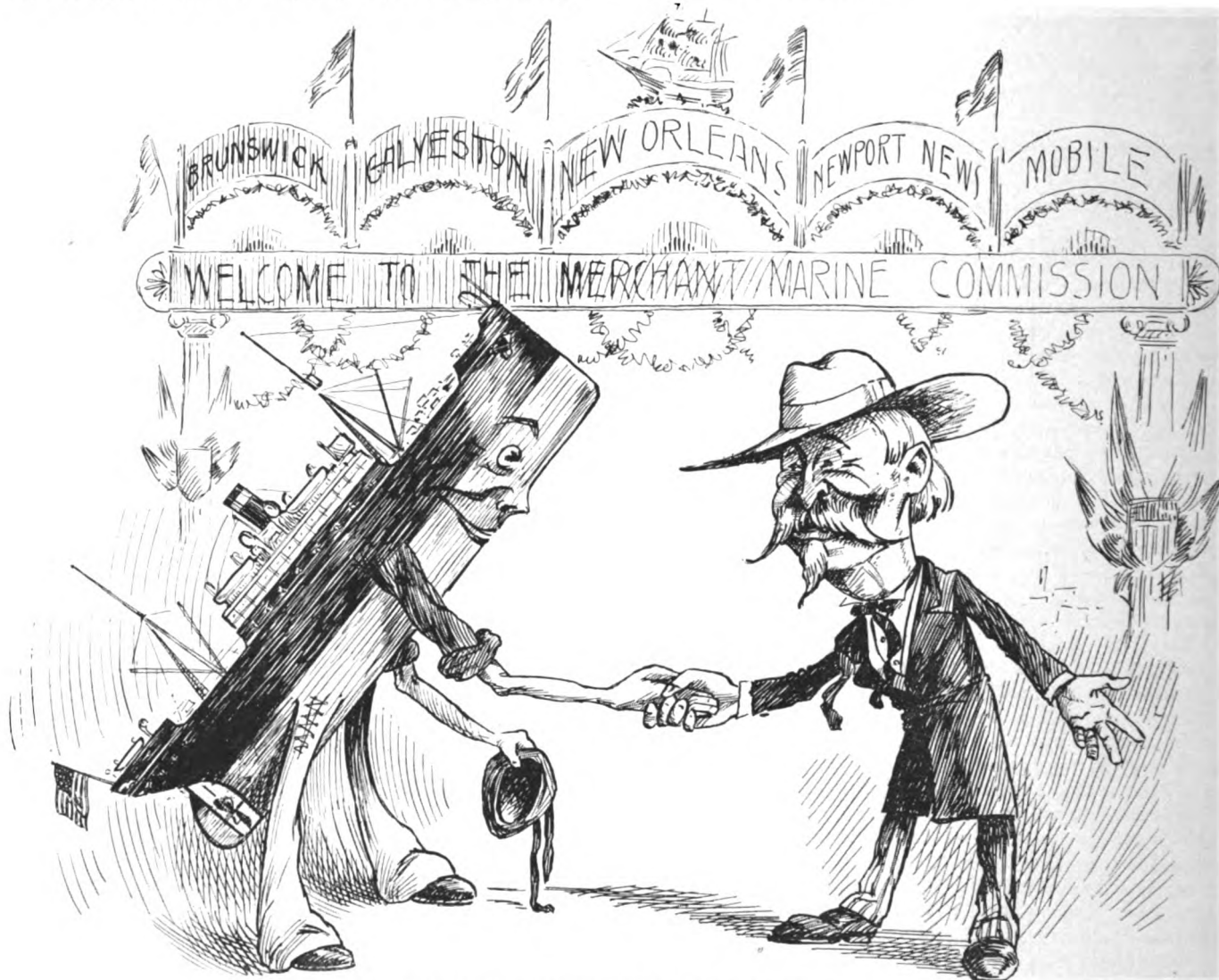
The United States supreme court on Nov. 7 denied the petition of the Pacific Mail Steamship Co. for a writ of certiorari in the case of Sarah Guyon against the company, confirming the decision of the circuit court of appeals against the company. The plaintiff was a passenger on the Rio de Janeiro, which went down off the Golden Gate on Feb. 22, 1901. The evidence showed clearly that only one of the eleven lifeboats was launched successfully and only three persons taken off in it, though the ship remained floating for twenty minutes after the signal to lower the boats was given. One hundred and twenty persons were drowned. The steamship company

the passengers of an ocean steamer have been able to resist the claim of limitation of liability of the steamship company and to recover full damages for loss by shipwreck.

CANADIAN SHIPPING NOTES

The report of Dr. W. Bell Dawson on the tides and currents on the south coast of Newfoundland has been received by the department of marine. It contains a good deal of interesting and valuable information.

The Dominion steamer Bayfield has returned to Owen Sound, Ont., having completed the season's work on the hydrographic survey of Lake Superior. The work done this season was in the vicinity of Silver Islet.



THE SOUTH WELCOMES THE AMERICAN SHIP.

Glad to see you, Sah! Hope to know you bettah! We need you for our cotton and lumber.

urged that its liability should be limited on the ground that the loss of life was caused by the inability of the Chinese crew to understand the white officers' commands to lower the boats. The circuit court of appeals refused to limit its liability.

In the application for the writ of certiorari the company's counsel argued that the Chinese crew was efficient and faithful and that the commerce of ports on the Pacific would be injured seriously by an adverse decision of the supreme court. The counsel for the passengers urged that a crew that fails to understand the commands to lower the lifeboats must be declared incompetent and insufficient. The supreme court, by making the decision of the circuit court of appeals final, rendered the steamship company liable for damages to the passengers of the lost vessel.

The case is said to be the only one on record in which

The Newfoundland coasting steamer Patron ran on the Penguin Islands, while making her second voyage, Nov. 3. The passengers and crew were saved, and the steamer was afterwards floated, with but slight injuries.

The Dominion fishery cruiser Vigilant, just completed at the Polson Iron Works, Toronto, made over 20½ miles an hour on her trial trip Nov. 11. The contract called for a speed of 16 knots. The Vigilant left Toronto for her station on Lake Erie Nov. 14.

The grounding of the A. E. Ames at the eastern gap, Toronto, recently, when drawing 14 ft. of water, has emphasized the necessity of dredging work being undertaken to make the harbor accessible to vessels of this class. If Toronto wants to have such vessels call the harbor must be made suitable.

R. E. Elgin (Ltd.) has been incorporated under the New

Brunswick Companies' Act with a capital of \$20,000 and offices at St. John, N. B., to carry on a general shipping business. R. C. Elkin of St. John, ship owner, is the principal man in the company, the other incorporators being members of his family and clerks in the office.

The Canadian Pacific railway ferry steamer *Armstrong*, running between Prescott, Ont., and Ogdensburg, N. Y., sank in the St. Lawrence river, Nov. 11, as the result of some cars of rails getting displaced. This is the second time the *Armstrong* has sunk in the river. The Donnelly Salvage & Wrecking Co. has charge of the work of raising the steamer.

The Bertram Engine Works Co., Toronto, during the winter will add a new covered deck to the *Modjeska*, of the Hamilton Steamboat Co.; will repair the Niagara Navigation Co.'s steamer *Chicora*, which was considerably damaged by a breakdown of her engines; and will add 25 ft. to the length of the Richelieu & Ontario Navigation Co.'s steamer *Spartana*.

GIANT STEAMERS FOR HAMBURG-AMERICAN LINE

With the advent of each new steamer into the great fleet of Atlantic liners, it seems that the limit of size and luxuriousness has been reached, but the new monster twin-screw steamships *America* and *Kaiserin Auguste Victoria* of the Hamburg-American Line will be equipped with several new features, designed especially to add to the comforts already found on the modern passenger steamer. The grill room introduced by the Hamburg-American Line on the flyer *Deutschland* and on the steamers *Moltke* and *Blücher* has earned a well deserved popularity. The experienced traveler in booking his passage, now asks, "Is there a grill room on board?" On the *America* and *Kaiserin Auguste Victoria* the grill room idea has grown into a large, modern a la carte restaurant, enabling passengers to dine when they please, to arrange luncheon and dinner parties for friends whom they meet on board, and also to have a change from the meals served in the regular dining room. The a la carte restaurant will be under the same management as the famous Ritz hotel in Paris and Carlton hotel in London.

The great size and enormous carrying capacity of these new giant steamships of the Hamburg-American Line can be best understood by reference to the comparative illustrations shown in this folder, and by a glance at the following statistics: *America*—Length over all, 700 ft.; breadth, 74 ft.; depth, 53 ft.; gross tonnage, 23,500 tons; displacement, about 35,000 tons; cargo capacity, 15,000 tons. *Kaiserin Auguste Victoria*—Length over all, 705 ft.; breadth, 77 ft.; depth 53.9 ft.; gross tonnage, 25,000 tons; displacement, about 40,000 tons; cargo capacity, 16,000 tons.

The *America* will be ready for service in August, 1905, and the *Kaiserin Auguste Victoria* in the spring of 1906. The former ship is being built by Messrs. Harland & Wolff of Belfast, Ireland, and the latter by the Vulcan Shipbuilding Works at Stettin, Germany.

The passenger capacity of these ships will be about 3,580 each, comprising 600 in first class, 300 in second class, 250 in third class and 2,130 in the steerage. A most welcome feature will be the three great promenade decks of enormous length and width, one of which will be used for the placing of deck chairs.

The speed of the *America* and *Kaiserin Auguste Victoria* will be moderate—17 knots an hour. This speed will enable these steamers to reach Plymouth and Cherbourg in about seven and a half days and Hamburg in nine days. The gigantic dimensions of these steamers, their enormous cargoes of freight, and their bilge keels will make them steady and comfortable in the roughest seas. Vibration will be avoided by installing perfectly balanced engines of the most modern type.

The much described upper berth will find no place in the

first cabin staterooms of the *America* and *Kaiserin Auguste Victoria*. The comfort of a lower berth is thus insured to every passenger. Spaciousness will be an important feature of the staterooms. Some of them will have the unusual dimensions of 10 ft. by 17 ft. Suites of large connecting rooms with bath and toilet, and combinations of one room and bath and toilet will be found in ample numbers. The ladies' saloons, smoking room and other customary features found on all liners, have not been neglected.

In addition to a large and well equipped gymnasium which was first introduced by the Hamburg-American Line on their steamers *Moltke* and *Blücher* and *Prinzessin Victoria Louise*, the new steamers will be equipped with Turkish baths, which will be in charge of experienced attendants. Another innovation which will be of great importance to the comfort of passengers, are the passenger elevators on board, of which there will be several running from the main to the boat deck, i. e., through all the five decks on which there are passenger accommodations.

BUILDING BATTLESHIPS IN NAVY YARDS

Although recognizing the desirability of having some of the government yards equipped for building naval vessels of the largest size Rear Admiral W. L. Capps, chief constructor of the navy, in his annual report published at the navy department last week, says that "the repairing and overhauling of the fleet must at all times remain the important work of navy yards and in time of war their resources will be taxed to the utmost in performing such work." The navy, he says, is increasing so rapidly that ample work will be provided for the navy yards by "repairs and refits" alone. Of the work on the battleship *Connecticut*, building at the New York yard, the chief constructor says that, despite every effort to reduce the cost of this, the first battleship to be constructed in a navy yard to the most economical basis, it can hardly be hoped that the work will be done as cheaply as when performed in private ship building yards, whose rates of pay for nine hours' work are in many cases less than those being paid for eight hours' work and in many cases less than those being paid for eight hours' work at the navy yard at New York.

"It may also be noted that private ship yards do not pay their per diem employes for holidays or when on leave, whereas a very large proportion of the per diem employes on the *Connecticut* receive pay for fifteen days' leave and seven public holidays during the calendar year, without any work being done in return therefor."

Attention is called to the urgent necessity for adequate docking facilities for vessels of the fleet and for the building of additional piers and general improvement of the berthing facilities at the several navy yards. Many improvements in navy yards are recommended, but the estimated cost of this work is not included in the portion of the report made public today.

The British steamer *Algoa* cleared on Oct. 29 from San Francisco for Hongkong via Yokohama with the most valuable cargo of merchandise ever sent from the Pacific coast to the Orient. According to the outward manifest filed at the custom house, the cargo was valued at \$1,412,840, distributed as follows: For Japan, \$623,487; for China, \$784,834; for Manila, \$2,153; for the East Indies, \$2,366. For Japan the consignments include nearly 1,000,000 lbs. of tin plate; nearly 500,000 lbs. of steel plate; more than 500,000 lbs. of salt; packages of electrical supplies, nails, machinery, angle iron and building material; reels of wire cable; dried fruit, raisins, canned goods, etc. The consignments to China include nearly 13,000 bbls. of flour, 11,452 cases of canned goods, large quantities of ham and bacon, dried fruits, raisins, beans, chocolate, groceries, salmon, shrimps, shrimp shells, beer, liquors, sugar, butter, soap, a few packages of machinery and drugs. The consignment to Manila consists entirely of whisky.

SUMMARY OF NAVAL CONSTRUCTION

The summary of naval construction, prepared by the bureau of construction and repair at Washington, shows steady progress upon naval vessels. The Louisiana, building at the Newport News Co., still maintains her lead over the Connecticut, building at the New York navy yard, and it is now clear that she will be finished first and will cost less when completed. Following is the summary:

		Degree of completion, per cent.	
		Oct. 1, '04.	Nov. 1, '04.
BATTLESHIPS.			
Ohio	Union Iron Works,	99.7	100
Virginia	Newport News Co.,	68.6	71.21
Nebraska	Moran Bros. Co.,	59	61.4
Georgia	Bath Iron Works,	65.3	67.47
New Jersey	Fore River Ship Building Co.,	69.1	70.7
Rhode Island	Fore River Ship Building Co.,	71.2	73.5
Connecticut	Navy Yard, N. Y.,	53.59	56.04
Louisiana	Newport News Co.,	59.68	61.5
Vermont	Fore River Ship Building Co.,	21.5	25.8
Kansas	New York S. B. Co.,	26.6	31.2
Minnesota	Newport News Co.,	43.8	46.56
Mississippi	Wm. Cramp & Sons,	10.24	11.89
Idaho	Wm. Cramp & Sons,	9.98	10.61
ARMORED CRUISERS.			
Pennsylvania	Wm. Cramp & Sons,	90.5	94.79
West Virginia	Newport News Co.,	94.2	95.5
California	Union Iron Works,	64	65
Colorado	Wm. Cramp & Sons,	95	97.11
Maryland	Newport News Co.,	90.57	92.16
South Dakota	Union Iron Works,	61.5	63
Tennessee	Wm. Cramp & Sons,	50.0	54.85
Washington	N. Y. Ship Building Co.,	44.7	50.2
PROTECTED CRUISER.			
Chattanooga	Lewis Nixon,	97	97
Galveston	Wm. R. Trigg Co.,	91	94
St. Louis	Neafie & Levy Co.,	51.1	54
Milwaukee	Union Iron Works,	58.5	60
Charleston	Newport News Co.,	83.2	84.34
GUNBOATS.			
Dubuque	Gas Engine & Power Co.,	63.9	68.2
Paducah	Gas Engine & Power Co.,	58.9	64.9
TRAINING SHIPS.			
Cumberland	Navy Yard, Boston,	72	80
Intrepid	Navy Yard, Mare Island,	56.2	63
TRAINING BRIG.			
Boxer	Navy Yard, Portsmouth,	85	90
TORPEDO BOATS.			
Stringham	Harlan & Hollingsworth Co.,	99	99
Goldsborough	Wolff & Zwicker,	99	99
Blakely	Geo. Lawley & Sons,	99	99
Nicholson	Lewis Nixon,	99	99
O'Brien	Lewis Nixon,	98	98

NEW NAVAL PROGRAM

Three battleships, five swift cruisers, six torpedo boat destroyers and two squadron colliers at an aggregate maximum cost of \$41,300,000 is the building program which the general board of the navy has recommended the secretary of the navy to urge congress to authorize at its next session. Secretary Morton will refer the recommendations to the board on construction for comment and indorsement and will base his recommendations to congress on the representations of the two boards.

Homogeneity is earnestly urged by the board as the great need of the navy. Partly for this reason and partly because of the general commendation at home and abroad for the latest type of American battleship the board suggests that the new battleships shall be of the general type of the Connecticut class. This would give the navy nine first-class battleships of 16,000 tons' displacement each. The board estimates that the complete cost of each of the new battleships, when ready for sea, will not exceed \$8,000,000, making a total of \$24,000,000 recommended for new battleships.

MR. HENRY A. VAN ALSTYNE

Henry A. Van Alstyne, who, as state engineer will have charge of the enlargement of the Erie canal to accommodate barges of 1,000 tons capacity, was born in Columbia county, N. Y., in 1869. After preparing for college at Nassau academy and Marshall seminary, he completed a four years' course in Union college, graduating with the degree of civil engineer, and immediately entered upon the practice of his profession,



MR. HENRY A. VAN ALSTYNE.

acting as engineer in charge of construction of public works until 1894, when he entered the service of the state as assistant engineer in the state engineer's department. In 1897, Mr. Van Alstyne accepted the position of superintendent of construction and engineer for the Furnaceville Iron Co. in connection with the improvement of the state canals on the western division, and upon the completion of their work, entered the employ of the Union Bridge Co. at Athens, Pa., where he remained until 1899 when he re-entered the state engineer's department as assistant engineer of the eastern division, being subsequently promoted to first assistant resident engineer, and in 1901 to division engineer of the eastern division, which position he held until promoted to that of state engineer on May 1904.

The Midland Towing & Wrecking Co.'s steamer Midland was sunk at Midland, Ont., Oct. 31, as the result of some Hal-lowe'en pranks by boys.

ORE SITUATION AT HEAD OF LAKES

Duluth, Nov. 15.—A few boats are already being put out of commission here and there will be a general withdrawal of barges during the next two weeks. It is getting to be a difficult matter for masters to retain crews on arrival here. In spite of the fact that times have been dull all summer and of the reports that the labor market has been overstocked, there never has been a time when common labor was more scarce than now. In the lumber woods wages are already \$30 a month and board, which is \$4 to \$5 better than a year ago, and men are hard to get at this figure. Sailors are deserting for the woods and the mining camps. Mines are sure to be exceedingly active during the winter for all ranges have cleaned up stockpiles and are ready for a new deal to provide for the large tonnage that is sure to be wanted next season.

There are inquiries for ore for next year's delivery and sales have already been made at 50 cents a ton better than the going rate of this year for standard Mesabi bessemers. That is round lots of this ore have already been sold at \$3.50 a ton. This I know to be a fact, though it may probably be doubted or denied. The going rate for the year is liable to be considerably in excess of this figure when it comes to time for making general purchases.

Shipments from Minnesota mines for the first half of November will be about 1,200,000 tons, which is a record breaking figure for this time of year. It is not probable that shipments will be continued very late, for shippers are anxious to avoid frozen ore. The United States Steel Corporation expects to be about through its rush within a week and can congratulate itself that there has been no weather so far that has necessitated steaming ore in either cars or dock pockets. It is probable that all docks will be cleaned out this week, and that what ore is shipped hereafter will be direct from cars to vessel.

GRAIN SITUATION AT DULUTH

Duluth, Nov. 15.—Grain stocks at the head of the lakes are increasing rapidly, though there was a decline of 250,000 bu. in wheat stocks for the past week. There are now more than 14,500,000 bu. of all grains in store here of which 6,300,000 bu. are flax. Oats is coming to be an important grain here, and stocks of it amount to 3,400,000 bu. There is very little rye here and no corn. It may be that some corn will be received during the winter. There is a free shipment of wheat, from 250,000 bu. daily upwards, and rates have been dull for some time at 2¼ cents until Monday when they became strong at that figure and a lot of room was taken. Most of the grain now going forward is in bulk freighters, the liners being busy at other things. Wheat freights are more attractive than ore, though if a ship can get ore at present rates and be sure of immediate dispatch, the price is quite attractive.

Traffic managers are making every effort to push stuff forward as fast as possible and the amount of package freight arriving at and departing from the head of the lakes is very large. Cargo insurance expires three weeks from Monday last.

Several hundred thousand bu. wheat were worked for the east to millers last week, otherwise the demand is slow and dull.

Flaxseed receipts from now to the close of navigation will be enormous. There is a premium of 2 cents for November seed over December, and November is within a cent of May price, which is stimulating efforts on the part of country shippers to get in every bushel they can at once. The probability is that December will show a premium over parity with May price, carrying charges off, and that will maintain the receipts. The opinion is general that the pressure is off wheat so far as low grades are concerned. Estimates are for receipts for the last twenty days of November of not far from 5,000,000 bu. Wheat receipts are, consequently, falling off somewhat and will be light for a while.

CHICAGO GRAIN REPORT

Chicago, Nov. 15.—Within the past week the shipping inquiry has been fairly active and while rates covering early chartering ruled generally at old basis of 1½ cent, Buffalo wheat, there is at this time a better tendency and the establishment of a basis equalizing 1¾ cent Buffalo wheat appears in near prospect. P. H. Fleming & Co., vessel agents, say that perhaps the firmer feeling is occasioned more through a naturally short supply of vessels, considering the more attractive Lake Superior movement, but at all events effort is being made as far as possible to place Chicago bidding upon a competing basis.

The final figures as compiled by United States agricultural department practically disposes of all uncertainty as to the quantity and state of grains matured in the present crop year. The harvest compares favorably with previous years and considering the fine quality and admittedly short supplies abroad bespeaks much toward the country's general prosperity.

	Total Crop 1904.	Total Crop 1903
Wheat—Winter	333,000,000	400,000,000
Spring	218,000,000	237,000,000
	551,000,000	637,000,000
Corn	2,453,000,000	2,244,000,000
Oats	888,500,000	784,000,000
Rye	27,238,000	29,363,000
Barley	139,971,000	131,861,000
Flaxseed	24,354,000	27,301,510

Shipments of the week were thus distributed: All rail lines, 365,000 bu. wheat, 130,000 bu. corn, 660,000 bu. oats and 40,000 bu. rye. By lake to Buffalo and other American ports, 215,000 bu. wheat, 580,000 bu. corn, 442,000 bu. oats and 200,000 bu. rye. By lake to Canada points, 160,000 bu. corn and 20,000 bu. barley.

Lake and rail shipments—

	This week.	Last week.	Same week last year.
Wheat	583,826	564,037	1,069,005
Corn	871,106	726,465	2,140,071
Oats	1,101,950	1,110,177	1,413,943
Rye	239,000	.....	613,350
	2,795,882	2,400,679	5,236,369

	Shipments since Jan. 1, 1904.	Same time last year.
Wheat	14,877,130	20,862,088
Corn	64,891,452	83,970,557
Oats	41,751,706	58,070,650
	121,520,378	162,912,301

Stocks of grain in elevators—

	This week.	Last week.	Same week last year.
Wheat	4,221,000	4,342,000	4,843,000
Corn	576,000	1,223,000	4,243,000
Oats	9,329,000	9,844,000	3,063,000
Rye	446,000	645,000	311,000
	14,572,000	16,054,000	12,460,000

The new five-masted schooner named in honor of Harwood Palmer of Boston was launched last week from the yard of George L. Welt, Waldoboro, Me. The schooner has been constructed at an approximate cost of \$130,000 and is owned principally by William Palmer of Boston. The Harwood Palmer is 301 ft. long, 46 ft. beam and 27 ft. deep. She is a double-deck vessel, having an oak frame and hard pine planking and ceiling. Her auxiliary equipment is very complete.



DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED
OR ASSOCIATED WITH MARINE MATTERS
ON THE FACE OF THE EARTH.

Published every Thursday by

The Penton Publishing Company,
CLEVELAND, OHIO.

CLEVELAND:
CHICAGO:
DETROIT:
NEW YORK:

WADE BUILDING,
MONADNOCK BUILDING.
HAMMOND BUILDING.
150 NASSAU STREET.

*Correspondence on Marine Engineering, Ship Building and
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Subscription, \$3.00 per annum. To Foreign Countries, \$4.50.
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The Cleveland News Co. will supply the trade with the MARINE REVIEW
through the regular channels of the American News Co.

Entered at the Post Office at Cleveland, Ohio, as
Second Class Matter.

Nov. 17, 1904.

The Merchant Marine Commission, which made a tour of the Atlantic and Pacific coasts and the great lakes region in the early summer, is now engaged in concluding its hearings in the southern states. A hearing was held at Galveston on Saturday last and at New Orleans, Pensacola and Brunswick on Monday, Tuesday and Thursday of the present week. The concluding hearings will be held at Newport News on Saturday of the present week and a final general hearing will be given at Washington next week. Meanwhile the commission has been busily engaged in arranging and digesting the data submitted to it by various interests throughout the United States and will have its report ready to be submitted to congress on Monday, Dec. 5. As the report is to be presented to congress on the opening day of the session it is, of course, expected that the shipping measure will have the right of way at the forthcoming session. In fact, there does not appear to be any real issue before the American people at present except this question of shipping. It was through President Roosevelt's personal suggestion that the Merchant Marine Commission was formed and it is clear from his utterances during the present year that he is in favor of doing something to remedy the existing conditions in the American merchant marine. Whatever measure the commission, therefore, evolves will undoubtedly have the support of the administration. As the interests

which appeared before the Merchant Marine Commission were entirely non-partisan, probably quite as many democrats appearing as republicans, it is expected that there will be general unanimity in congress upon a suitable measure. It is one of the interesting things of the late campaign, destitute indeed as it was of any excitement, that the shipping question was the one to receive the most attention. In districts where it was made the sole issue, as for instance in the Detroit district, the shipping advocate was triumphantly elected. It is well known that the late Senator Hanna was sent to the senate on a shipping plank. He made the issue personal and distinctly told the electors that if they did not want him to vote for the shipping measure they should not return him to the senate. Gov. Myron T. Herrick of Ohio too has spoken emphatically in favor of protection to shipping, and the rousing majority which Ohio rolled up for Mr. Roosevelt at the election must be regarded as an endorsement of the administration's policy of which shipping is a part. The coming session of congress should not be permitted to adjourn until a satisfactory shipping measure has been placed upon the statutes. With a reasonable amount of aid it will not take the American people long to overcome the handicap which militates against American shipping on the high seas. It is sound business policy to spend a little money, or to take advantage of favoring laws, to retain in this country a portion of the \$200,000,000 which is now annually spent for the carriage of American products abroad.

In his annual report just made public Rear Admiral Washington L. Capps, chief constructor of the navy, makes what will be regarded in business circles throughout the country as a most sensible suggestion. Briefly he advises that no more battleships be built in government yards and makes the frank confession that private ship yards can build them cheaper and quicker. This, of course, has been known all along but it is none the less creditable to Admiral Capps that he frankly says so. It is not the legitimate province of the federal government through any of its departments to compete with private enterprise and the building of a ship whether it be for an individual or for a company or for the government itself is a private enterprise. It is work which rightfully belongs to the citizens of the United States and should not be performed by the government or any department of the government itself. There has been of late a tendency on the part of various branches of the government to encroach upon the field of private contract work and it is especially gratifying to see that Rear Admiral Capps does not sanction it. The battleship Connecticut, which is building at the New York navy yard will cost the people of the United States more than the battleship Louisiana which is building by private contract at the yard of the Newport News Ship Building & Dry Dock Co., Newport News, Va. Moreover the Louisiana will be finished first, which in time of emergency would in

itself be a most important consideration. The chief constructor says that despite every effort to reduce the cost of the battleship Connecticut, the first battleship to be constructed in a navy yard, on the most economical basis the work will not be done as cheaply as that upon the Louisiana. He cites as a reason that the workmen at the government yard work eight hours a day as against nine hours in a private yard and that moreover they have the advantage of rather long vacations with full pay, a practice which does not obtain at a private ship yard. This is, of course, a consideration, but there is one that is far more important and that is that private enterprise must make ends meet. Private enterprise is trained in the school of hard knocks to make ends meet or fail. There is no other alternative. Business, therefore, is watched from all possible view points and every effort tends to economy and dispatch. With a government official, no matter how well meaning he may be, this condition does not obtain. He knows there is unlimited capital back of him and that the question of dollars does not enter into it at all. A government-produced product is therefore going to cost more than a private-produced product. This will always be so and it is human nature that it should be so. The chief constructor adds that the repairing and overhauling of the fleet must at all times remain the important work of the navy yards and in times of war their resources will be taxed to the utmost in performing such work.

Taken in connection with the new naval program recommended by the general board the advice of Admiral Capps has much significance. As far as he can influence it the three battleships, five scout cruisers, six torpedo boat destroyers, six torpedo boats and two squadron colliers, called for in this building program, will be entirely constructed at private yards. This building program, if authorized, will keep the ship yards well filled with naval orders and if the tour of the Merchant Marine Commission amounts to anything, that is if it will result in the persuasion of congress to do something for the merchant marine in the foreign trade, ship yards will undoubtedly have in addition a number of orders for merchant ships. It is reasonable to expect activity in the coast ship yards as well as in the lake ship yards for some time to come.

AMERICAN SHIP BUYS LAND AT LORAIN

The American Ship Building Co. last week completed a deal whereby it added twenty acres of land to its yard at Lorain. This will practically double the acreage of its Lorain plant and will make it the most extensive plant which the ship building company owns on the great lakes. It is not the purpose, however, as was related in the newspapers, to dismantle the West Bay City plant. The ship building company regards its West Bay City plant as one of the most valuable and most complete on the lakes and purposes to improve it rather than to dismantle it. There is no limit to the length of a ship which may be built at the West Bay City plant because no matter what its length may be it can readily be taken to the lake.

The recent flurry in the stock of the American Ship Build-

ing Co. appears to be the result of a broker's campaign and is entirely confined to outside influence. The business of the ship building company is ship construction and repairing and is in no way concerned with the stock market. It has a great amount of business on hand and its stock is undoubtedly a very desirable investment.

No basis whatever exists for the report circulated in some of the newspapers that the United States Ship Building Co. was endeavoring to acquire the American Ship Building Co. On the contrary the United States Ship Building Co. is now disposing of some of its underlying plants to their original owners or to new companies. Mr. Schwab did, however, at the launch of the Wolvin regret that those who steered his dollars into ship building plants did not steer them into those that were as well managed as the plants of the American Ship Building Co. and in this way gave deserved praise to Mr. J. C. Wallace.

FREIGHT SITUATION

The United States Steel Corporation went out of the wild ore trade on Tuesday of the present week and announced that it would carry the balance of its ore to come down this season in its own vessels. This was thought to have a tendency to keep the ore rate at its present basis, which is 75 cents from the head of the lakes, notwithstanding the fact that there exists considerable disparity between this rate and the rate prevailing for grain. However, 80 cents was paid on ore from the head of the lakes on Wednesday. The rate of 2½ cents from the head of the lakes, which is now being paid for grain, is equivalent to 93 cents on ore. Undoubtedly this rate on grain will attract available tonnage, but it is doubtful if there is enough of that commodity obtainable to satisfy the vessels that will seek such employment. There is not enough grain to be had to materially influence the freight market without a brisk demand for ore tonnage. A few days ago it looked as though the ore rate might go to a dollar for the last few trips, but the announcement of the Steel Corporation puts a new face upon the situation. Owners, however, are not placing their boats ahead because they feel that the general condition of the trade favors an advance in the ore rate. There is considerable demand for ore, some producers even being offered contracts in excess of their desire to fill them.

As the total movement of ore, notwithstanding the brevity of the season, amounted to 17,159,000 up to Nov. 1, it is confidently expected the total movement of the year, railway shipments included, will exceed 20,000,000 tons. This is approximately 4,000,000 tons less than the shipments of 1903. Stock piles, therefore, on Lake Erie docks Dec. 1 will not be large and with good consumption the docks are likely to be bare at the opening of navigation next year. This condition, with the revival of the iron trade already apparent, ought to make the season of navigation on the great lakes next year an active and profitable one. At any rate that is the expectation.

EXTENSIVE REPAIRS TO STEAMER MILLER

Repairs on the steel steamer P. P. Miller were completed at Buffalo last Saturday and the vessel was taken out of the dry dock. The damage to the steamer's bottom caused by stranding on Simmon's reef in Lake Michigan, Oct. 19, proved to be more serious than was at first apparent. The vessel was in dry dock fifteen days and twenty-nine plates, ranging from 12 to 32 ft. in length, were taken off and straightened and put back, four of these being replaced with new. Over 100 of her 15-in. channel floors were either fractured or buckled so that they had to be cut out and replaced with new. The repairs were supervised in the owners and underwriters interests by Mr. James Nacey of Cleveland and Mr. Edward Gaskin of Buffalo.

STEEL DUMP SCOWS

Wood as a material for hull construction is being rapidly discarded by the dredge men on the great lakes. The severe use to which their tonnage is put is conducive to rapid depreciation and the average dredge operator finds that it is now

practically impossible to place the most modern dredging machinery in a wooden hull and get anything like a profitable life out of his outfit. Likewise the increased sizes of

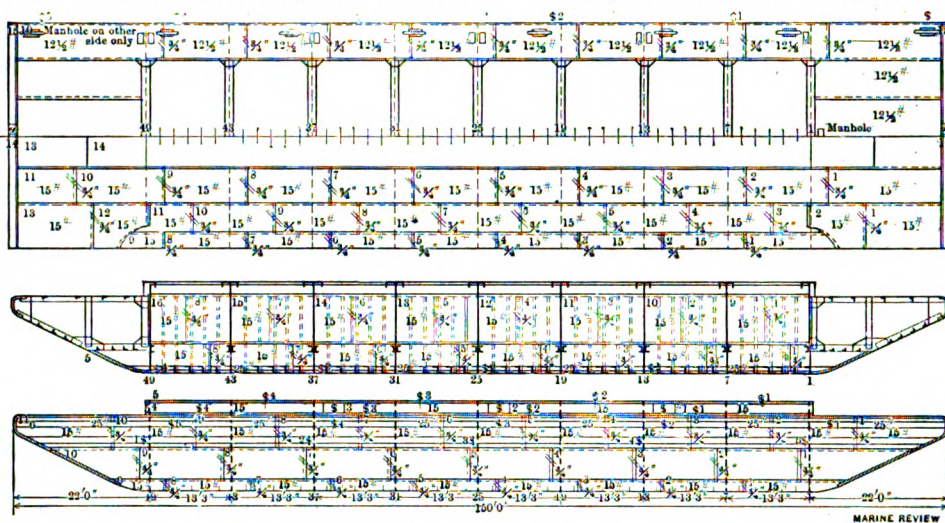
dredges, dump scows, etc., have made it a serious task to so strengthen them that they will perform their work without distortion. The strength in wood work, of course, depends on fastening or bolting the timbers together and it is obvious that in time under severe racking strains there will be some lateral movement. Even though this be slight at first it increases more and more and moisture entering starts a destructive decay of the wood and rusting of the metal. This action is much more pronounced in dredge tonnage than in ordinary ships and dredge concerns finding that the yearly repair bills to their wooden tonnage amount from \$30,000 to \$50,000 are beginning to change their equipment to steel.

The item of maintenance of plant is, of course, a serious one and outside of accidental damage, which can be covered by insurance, the cost of keeping a steel hull in workable condition is practically nothing. Then again wooden hulls cost from 20 per cent to 30 per cent more to build than they did formerly. Thus dredge men, in view of the increased cost and rapid depreciation of wooden hulls, have discarded them and the day is not far distant when steel will be in as universal use for this class of boat as it is for large tonnage. The methods for building scows and dredge hulls of steel have been so improved of late years that there is little difference in favor of wood, so far as cost is concerned.

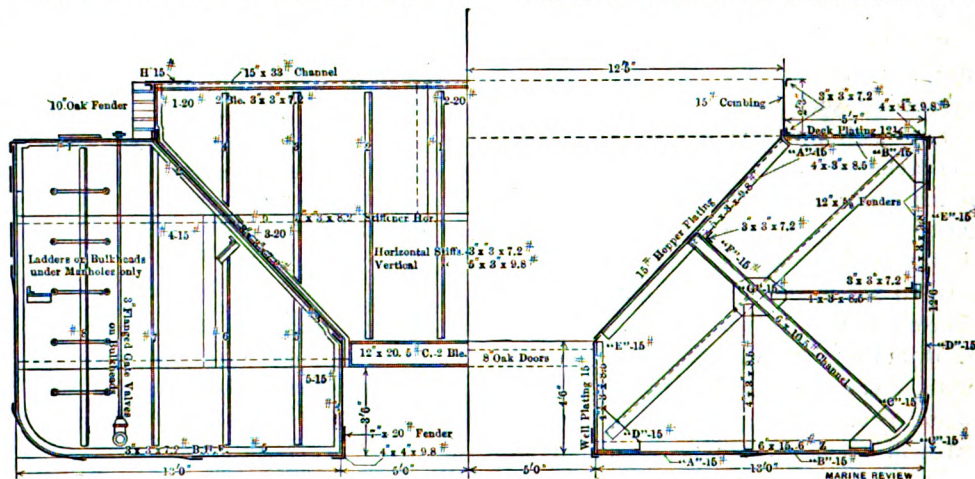
The foregoing remarks preface a description of the modern steel dump scow for which there is a growing demand. The increased size and efficiency of dredges is accompanied by the call for a dump scow that shall be larger and more buoyant

than its predecessor. During the last year two steel dump scows of 520 and 750 cubic yard capacity have been built at the yards of the Manitowoc Dry Dock Co., Manitowoc, Wis., which makes a specialty of the construction of dredge hulls, tug lighters, dump scows, for dredge concerns on the great lakes.

It might be well to note a few points which make or mar the efficiency of a dump scow. In the first place after computing the capacity of the hopper it is important that the hopper sides shall have sufficient slope so that there will be no difficulty in dumping the load. Next the scow should possess sufficient buoyancy to carry a full load of the heaviest material and at the same time have plenty of freeboard. Then we must give the hull enough structural strength and stiffness to enable it to carry and dump any or all of the pockets without distortion to the hull. Lastly the hull must be so designed that the power required



DECK PLAN, BOTTOM PLATING, SHELL PLATING AND LONGITUDINAL SECTION OF 750 CUB. YDS. DUMP SCOW.



MIDSHIP SECTION OF DUMP SCOW.

to tow it is reduced to a minimum.

The main items together with numberless little points determine the general success of the scow and it is easy to see that the design of a scow is a matter of experience and correct calculation and not guesswork.

The accompanying drawings explain themselves, but it may be well to call attention to several points. The bulkheads and end are cut at a level with the bottom of the doors having a clear space through entire length. This is done to make towing easier and to clear the scow of any obstruction that may float into the well. It will also be noticed that the bracing under the hoppers is stronger than might seem necessary, but attention is called to the fact that the hopper must withstand the shock of tons of dredged material dropped from a height of 10 to 15 ft. The bulkheads are made watertight to shell, dipper bottom and well plating and are spaced about 13 ft. apart. This gives rigidity and strength to the scow and provides a hopper space that will have doors which are not too large to withstand the strains to which they are subjected. On the 750 cubic yard scow a steam engine is placed forward of the last bulkhead and operates the hoisting

gear, thus effecting a great saving in the labor required to operate it. The cast steel corner as shown in the accompanying drawing is a new method of obtaining a durable rounded corner on the sloping bilge end of the scows.

Up to this time the 750 cubic yard scow is about as large as any used on the lakes, but in order to keep pace with the modern dredge even this size will have to be increased.

NEW COAL HANDLING MACHINERY FOR DULUTH

The Wellman-Seaver-Morgan Co. of Cleveland was recently awarded contract to construct two large coal handling machines for the Boston Coal Dock & Wharf Co., Duluth, Minn. This is one of the docks under the management of the St. Paul & Western Coal Co., of which Mr. M. J. Patton is superintendent. The machines will consist of two conveyor bridges, each about 350 ft. long, including front and rear cantilevers. The machines will be designed so that coal may be screened and loaded into box cars as well as unloaded from vessels, and will be built to be operated by steam. They will be equipped with 2-ton Hulett patent excavating buckets, and machinery designed to give maximum speeds of operation. The structural work will be of steel throughout and the machines will be self propelling along the dock.

AERIAL BRIDGE NEARLY READY

Duluth, Nov. 15.—The aerial bridge at the Duluth canal entrance will be completed so far as the high truss is concerned, this week, if nothing goes wrong. The builders have taken dangerous chances, but the weather has been with them and they can thank their lucky stars they have not met with far more serious financial losses than rumor credits them with. When it came time last week to connect the two ends of the cantilever it was found that there was a deflection of three inches more in one side than in the other, and workmen have been guying back the north pier to permit the placing of the final chord connecting the two loose ends. Apparently the deflection had not been properly estimated or allowed for in construction. Probably the bridge will be ready for use long before next spring. It is a very conspicuous feature of the landscape for all lake passengers approaching Duluth.

MEAN STAGES OF WATER

The gage records of the United States lake survey show the following mean stages of water above mean sea level, for October, 1904:

	Stages during Oct.	Higher Lower		Higher Lower	
		than during same month last year.		than during Oct., 1895.	
	Feet.	Feet.	Feet.	Feet.	Feet.
Lake Superior.....	803.27	.....	0.13	0.13	.....
Lake Michigan.....	581.05	0.55	.....	1.74	.....
Lake Huron.....	581.28	0.43	.....	1.61	.....
Lake Erie.....	572.26	0.01	.....	1.96	.....
Lake Ontario.....	246.95	1.15	.....	3.31	.....

Present fall, Lake Huron to Lake Erie, 0.42 ft. more than a year ago.

AROUND THE GREAT LAKES

The steamer George Hope, which sank at her dock at Escanaba, has been abandoned by the underwriters, as a total loss.

The Canadian Pacific railway has decided to close the season of navigation for its lake route by the sailing of the Alberta from Owen Sound Nov. 29 and the same steamer from Fort William Dec. 2.

The steamers of the Cleveland & Buffalo Transit Co. will make their last trip from Cleveland Nov. 29 and from Buffalo

Nov. 30. The steamers of the Detroit & Cleveland Navigation Co. will make daily trips until Dec. 1.

While coming down Lake Superior in the storm the rudder of the steamer W. H. Gratwick No. 1 broke off at the 14-ft. mark. The steamer managed to make her way to Sault Ste. Marie but was towed down the lakes for the balance of the trip.

The Ship Owners Dry Dock Co. of Chicago is now operating its plant on the north branch as an open shop. The men are working nine hours a day, the same as at other lake ship yards. The company locked out the union men some time ago on account of their demand of an eight hour day. A new force has now been secured.

The schooner Mautence bound down with lumber in tow of the steamer Lizzie Madden became waterlogged in the gale on Lake Erie below Colchester. The tugs Florence and Home Rule went to her assistance and towed her within one mile of the Bar Point lighthouse when she brought up on the bottom. The lighter Hammond was summoned to take off her cargo.

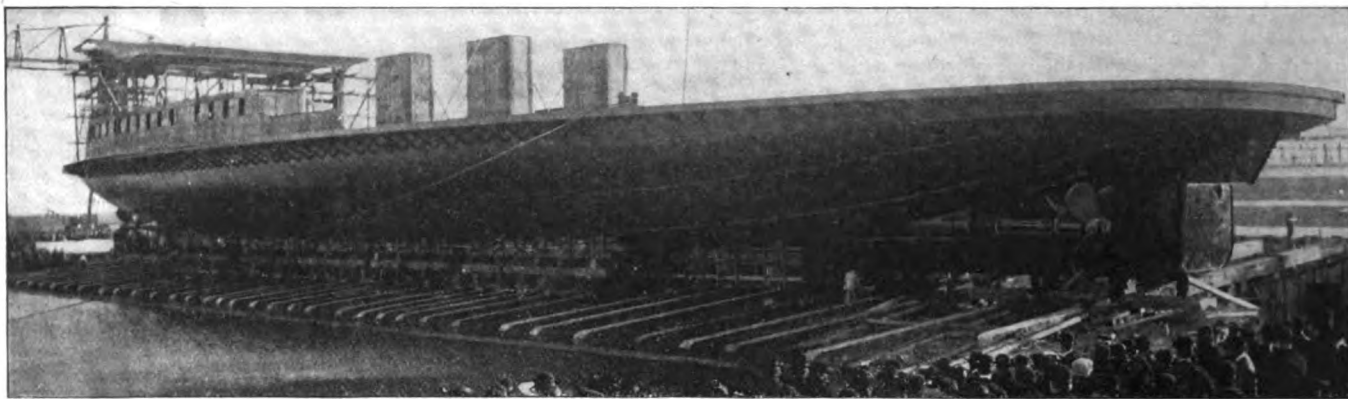
The small steamer Wyoming foundered on Lake Huron five miles off Point Aux Barquex last week. Her crew of thirteen men were rescued by the life saving crew from the Point Aux Barquex station. The Wyandotte was bound from Goderich with a cargo of timber. She encountered heavy weather on reaching Lake Huron and finally went down in deep water. The Wyandotte was owned by Carey & Shannon of Saginaw.

The tug John Gregory, owned by L. P. & J. A. Smith of Cleveland, sank just off the breakwater at Cleveland last week and carried Capt. Minnie with her. The other three members of the crew were rescued by the life saving service. The Gregory had been lying outside the west breakwater with a lighter but when the gale reached her maximum of 60 miles an hour Capt. Minnie decided to get inside the breakwater. In trying to make the turn for the entrance the tug got into the trough and went over. The Gregory was valued at \$20,000 and was insured.

The schooner William Crosthwaite burned at her anchorage under White Fish Point last week and is a total loss. The crew had only time to escape from the boat, leaving money and clothes behind them. The Crosthwaite was bound up Lake Superior without cargo in tow of the steamer E. M. Sanders. On account of the northwest gale the vessels sailed under the shelter of White Fish Point in company with a big fleet of storm bound boats. The crew took advantage of the delay to do their laundry work, using a stove in the forecabin. During supper time the flames spread from the stove to the wood work and as the deck had recently been coated with tar the entire vessel became involved in flames. The Crosthwaite was owned by the Gilchrist Transportation Co. of Cleveland.

The Japanese liner America Maru, under the command of Capt. Philip Going, reached Yokohama from San Francisco safely on Nov. 7. Her cargo of freight consisted chiefly of materials for making powder for the Japanese government, and some anxiety was felt for the steamer's safety from Russian cruisers. Capt. Going hopes to receive the command of a Japanese transport, in which event the America Maru will probably be commanded by Capt. W. F. Filmer, formerly of the Hongkong Maru.

It is understood that a number of the underlying plants of the United States Ship Building Co. are to be sold to the original companies that owned them, or to individual syndicates. It is related that negotiations are now in progress for the sale of the Union Iron Works, the Harlan & Hollingsworth Co., the Bath Iron Works and the Hyde Windlass Co.



CAR FERRY DETROIT JUST PRIOR TO THE LAUNCH.

LAUNCH OF THE CAR FERRY DETROIT

The launch of the car ferry Detroit, building for the Michigan Central Railroad at the yard of the Great Lakes Engineering Works, Detroit, Mich., on Saturday last was a success in every particular. It is estimated that 2,000 persons saw the big car ferry take to the water.

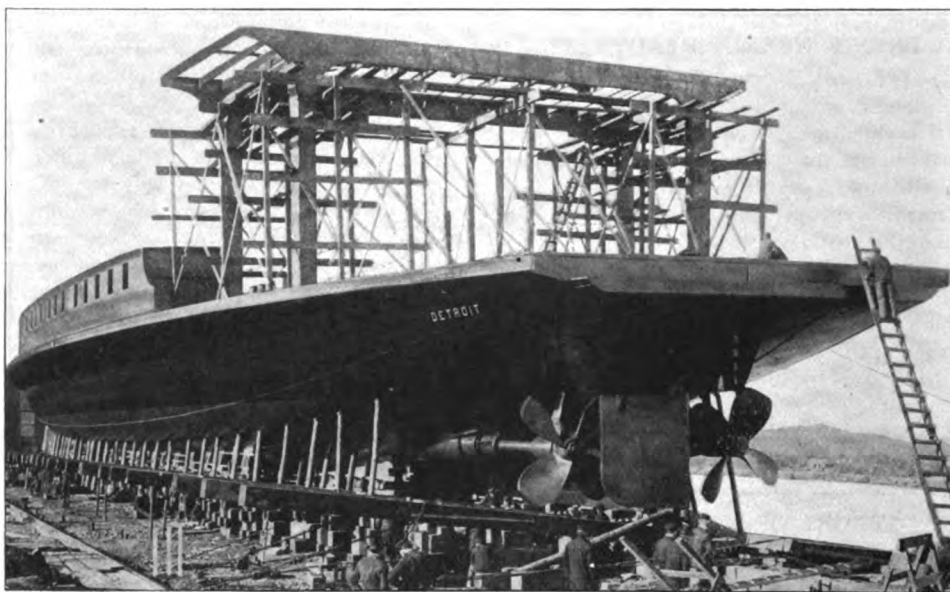
As she did so a general salute was given by every craft within hearing. The Detroit was christened by Miss Elizabeth Walker Pessano, daughter of Antonio C. Pessano, president and general manager of the Great Lakes Engineering Works. Miss Pessano was escorted to the launching stand by Mr. George H. Russel, vice president of the engineering works, and was accompanied by Miss Helen Pessano, Miss Helen Russel, Miss Catherine Russel, Miss Florence Russel, Miss Grace Pessano, Miss Elexandrine Sibley, Miss Dorothea Sibley, Miss Fredericka Sibley, Miss Mildred Plum, and Miss Catherine Moore. On the launching stand also were Mr. Antonio C. Pessano, and Mr. George H. Russel, representing the builders; Capt. F. D. Herriman, Joseph Boyer, H. C. Potter, Robert E. Plum, Walter S. Russel, Senator Alger, William Livingstone, J. C. Hutchins, Capt. J. R. Innes of the Michigan Central car ferry system, Capt. Harry Innes and J. A. Westley, chief engineer of the Michigan Central car ferry fleet. The guests were taken to the ship yard on the steamer Pleasure.

Just as the big car ferry was released Miss Pessano lifted the customary bottle of champagne and broke it smartly against the bow of the ferry. The Detroit measures 308 ft. on deck, 64 ft. beam and 19½ ft. deep. She has four independent wheels, as will be noted in the accompanying illustrations, two at each end, each operated by compound engines with cylinders 24 and 48 in. diameters by stroke of 33 in. Steam will be supplied by two double ended boilers, 13 ft. by 12 ft. and two single ended boilers, 13 ft. by 11½ ft. The

car ferry has a capacity for twenty-eight standard size cars. The Detroit is to be completed at once in order that she may go into commission before the river freezes this winter.

Conditions to be met with in the Detroit river are rather unusual because owing to a steady current the ice windrows

to several times the depth of the natural surface ice. It has been the boast of the Michigan Central Railway, however, that notwithstanding the handicap which nature imposes upon its services at this point it is never stalled by it. Its ferries have always succeeded in crossing the Detroit river, no matter in what condition the ice might have been. It requires ferries, of course, of



BOW VIEW OF CAR FERRY DETROIT.

unusual power to break through this barrier and during the past year the railway company has been improving its ferry equipment to give it more power. It is not expected that the Detroit will meet any condition of ice that she cannot surmount. The car ferry Transfer too has lately undergone extensive alterations at the yard of the Great Lakes Engineering Works, including the compounding of her engines to give her greater power so that she is also equipped to master any difficulties that the river service may present to the railway during the coming winter.

MERCHANT MARINE COMMISSION

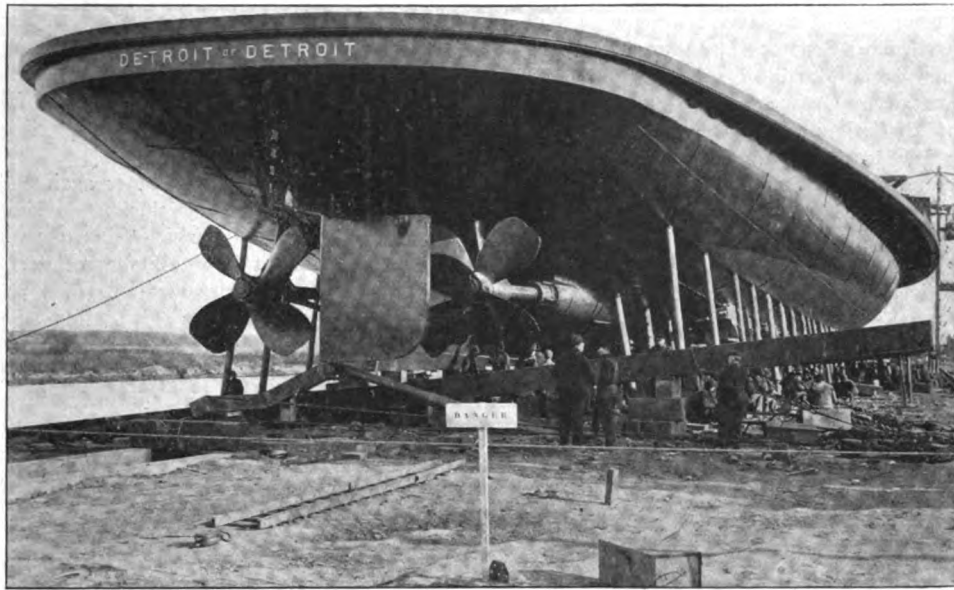
The Merchant Marine Commission, appointed to inquire into the state of American shipping in the foreign trade, resumed its hearings in the southern states last week and this week. On Saturday last the commission held a hearing in Galveston at which Senator Stephen R. Mallory of Florida presided.

Col. Walter Gresham, ex-congressman, suggested at the hearing that it would be a good idea if a subsidy be granted on material used in the construction of ships, so that they might be built in this country at the same or a cheaper cost

than on the other side. That is, the subsidy should be equal to the per cent which the government receives on these materials. He thought the people in general would like a subsidy on a line of benefit to the heavy freighters who import more stuff and are the ones who build up the merchant marine of a country. He also believed that the subsidy should be given the slower lines as they can do the business better.

H. Mosle launched into a thorough discussion of the discouragements placed on men endeavoring to run steamship lines under the American flag over those run under foreign flags. It was Mr. Mosle's idea that there would never be much merchant marine in this country unless free ships and free crews were given. By free ships he meant ships built of material upon which there was no duty. By free crews was meant free leeway in the hiring of officers. The law is that officers on ships flying the American flag have to be citizens of the United States. He stated that he had started in on the steamship business in running a line under the American flag, but had to quit that and place his line under the Norwegian flag.

Mr. Mosle stated that, in his opinion, a subsidy could not overcome the disadvantages of cheaper vessels of foreign countries. He then gave figures to show the difference in cost between running of steamships under the United States flag and under foreign flags. He declared that, locally, he was against subsidy. Mr. Mosle told of trade conditions with Colon. He stated that he had been after the trade but that all small fellows would, in all likelihood, lose out, as the conditions were adverse. He did not like the coastwise subsidy, as that trade was already protected. The drawback proposition was not good, in his estimation, on account of the discrimination that it made. Continuing, he said that the original cost



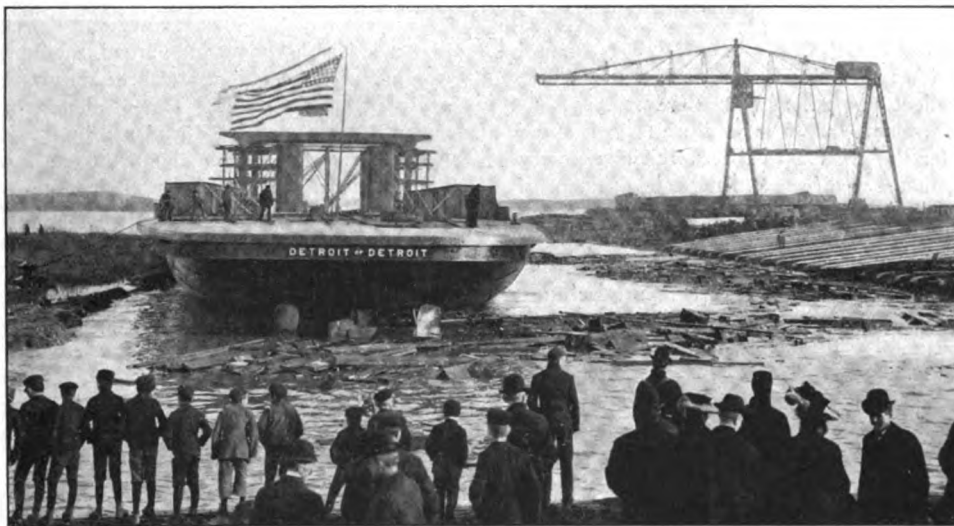
STERN VIEW OF CAR FERRY DETROIT.

of the ship was not nearly so important as the cost of running and obtaining good services. After the hearing the commissioners were shown the port's facilities.

The commission then left for New Orleans where hearings were held on Monday of this week. In New Orleans Mr. Wintrop L. Marvin, secretary of the commission made a statement concerning the tour of the commission and its purpose. He said:

"The gradual decline of the American merchant marine has been a matter of national concern for a number of years, and the subject is one to which congress has devoted considerable attention. Today there is not one transoceanic steamship building in any American ship yard, on either the Atlantic or the Pacific.

James J. Hill's Dakota, recently completed and now preparing for sea at New London, Conn., is the latest acquisition to our deep sea fleet, and since June, 1901, not a single order has been given to American ship builders for a transoceanic steamship. For the first time in American history, it may be said, the build-



CAR FERRY DETROIT JUST AFTER THE LAUNCH.

ing of ocean vessels has absolutely ceased at our ship yards. Only 9 per cent of our overseas commerce is being carried in American bottoms. The urgent need of a careful and exhaustive investigation into the affairs of the merchant marine will thus be readily seen.

"At its last session congress therefore authorized this commission to make a complete and far-reaching inquiry into this matter and report on the first day of the next session, which convenes Dec. 5. The members of the commission are to embody in their report suggestions as to what legislation they deem necessary for the development of the American merchant marine and commerce, and also to recommend whatever changes they find necessary in present laws touching the treatment, comfort and safety of seamen in the American

merchant service. The scope of their inquiry is very wide. The commission is composed of Senator Gallinger of New Hampshire, who is chairman; Senators Lodge of Massachusetts, Penrose of Pennsylvania, Martin of Virginia, Mallory of Florida, and Representatives Grosvenor of Ohio, Minor of Wisconsin, Spight of Mississippi, Humphrey of Washington, and McDermott of New Jersey. From its personnel it will be seen that the commission is strictly non-partisan and that all the sections of the country have been accorded representation upon it.

"It is the desire of the members of the commission, individually and collectively, after learning the views of the mercantile interests in the various sections, to devise some safe and effective plan by which the American merchant marine may be restored and developed, and the number of American seamen increased. I desire to emphasize the fact that the members of the commission are not wedded to any particular policy or scheme of restoration, and although a great deal is being said just now of the subsidy plan, I think it may justly be stated that the application of discriminating duties in the indirect trade, as a means of fostering and the building of ocean ships and freighters, has found more advocates in the hearings before the commission than any of the other suggested policies.

"The sittings of the commission began early in May, with hearings at the New York Board of Trade and Transportation. Among the merchants, builders and ship owners appearing at this sitting may be noted James J. Hill and Lewis Nixon. Largely attended hearings were also held in Philadelphia, Baltimore and Boston. In June the commission visited Chicago, Detroit, Cleveland and Milwaukee, on the great lakes. A sub-commission went to the Pacific coast during July, sitting at Seattle, Tacoma, Portland and San Francisco. The work was then postponed until after election."

THE PORT OF CLEVELAND

Editor Marine Review: In the Marine Review of Oct. 27 there were some excellent suggestions as to the lost opportunities of the port of Cleveland, due to her failure to look ahead and make provision for the great lake carriers which have come up in a night. Attention was directed to the establishment of steel mills, elsewhere than at Cleveland, and also to the provision being made at Buffalo to remove some of the obstacles to navigation at that port. Chicago is rapidly forging ahead also in the enlargement, at local expense, of her port facilities.

It is a well-recognized principle that transportation seeks the line of least resistance, which is the one possessing the greatest facilities at least cost. Hence terminal facilities, break of bulk, storage and port-charges are factors, as well as the mere cost of the transportation between termini. In view of this it must be noted that the movement of population in the great grain producing areas, is to the northwest across the border into the valleys of the Saskatchewan, Peace, and Slave rivers, where about 50,000 immigrants from the United States are taking up homesteads annually, far in advance of the avenues of trade, while the dominion is encouraging, by government subsidies, the construction of thousands of miles of additional railroads stretching from Port Simpson on the Pacific to Port Arthur on Lake Superior, with its largest elevator in the world, on to Moncton, New Brunswick. Other lines are projected to Hudson's Bay, and the short cut waterway, connecting Georgian bay with the Ottawa and giving an outlet for the products of this great development to the sea via Montreal and Quebec, cutting out the lower lakes entirely, is a measure not to be despised. Already the enterprising, but sparsely settled colony of the British Crown, having a population of only about 7 per cent that of the United States has a commerce estimated at 20 per cent of ours, and the ratio is growing rapidly.

It is also a fact that the "all-round-the-world" distances di-

minish as the latitude approaches the poles or, technically speaking, as the cosine of the latitude, so that while the equatorial circuit is 25,000 miles, that along the fiftieth circle of latitude is only about two-thirds as great, or 16,000 miles. Thus the spherical form of the earth favors the northerly routes as to distance. This is neutralized in part by ice in the winter seasons.

Another factor which militates against the development of traffic, is the policy of exclusion, so rigidly adhered to by monopolies, or localities which seem to enjoy some special advantages. Thus, it is within the recollection of some young men, that the trade organizations of a prominent lake port, opposed the construction of a ship-canal to connect the waters of the Ohio river with those of Lake Erie, under the impression that the coal and iron could be handled to better advantage at that port by causing a break of bulk and an overland haul at higher rates. As Mr. Edw. P. North, has shown in the Review, referred to, this was a serious error since it has placed an additional burden on all the coal and ore consumed in manufactures and for domestic purposes, not only at that port but at all others which the canal would serve. It has been frequently shown that such waterways do not injure the railroads with which they appear to be in competition but greatly benefit them. The best illustration of this law is to be found in the existence of the great lakes themselves, without which, although the area they cover is non productive of tonnage, the lake cities could not exist and the most prosperous railroads in the country would be bankrupt.

That canal project is about to receive attention from the coming, closing session of the present congress, in the form of a bill to grant a national charter and in view of the great activity of our neighbors who have made no mistakes in their policy of encouragement to their waterways and merchant marine, it would seem that the astute Yankee, if alive to the best interest of his own country and desirous of maintaining his trade both at home and abroad, should follow the excellent example of his neighbor and urge the passage of this measure as speedily as possible. This is the more necessary in consideration of the activity displayed by the Empire State in the enlargement of the Erie canal, thus to some extent reducing the resistance between Lake Erie and the sea, which will stimulate commerce at all the lake ports. But unfortunately the channel has not capacity sufficient to compete successfully with the existing Canadian system along the St. Lawrence.

Another measure affecting interstate commerce and which is now pending in congress, is the emancipation of our interior, artificial waterways from the burden of tolls imposed upon them by private corporations which levy prohibitive taxes on our commerce in restraint of trade. The policy of the government has been to condemn and purchase all such waterways and enlarge them as great avenues of commerce, but the coast-wise system is still hampered by corporate management, and yet it is the one which is of greatest importance to the government as a military route and means of defense. In fact but for this open waterways during the civil war, Washington would have been destroyed as it was in 1812 because of its non-existence at that time.

To return however to the more important local conditions of the port of Cleveland, it is manifest that a systematic plan for the enlargement of the docks and piers could and should be made, so that the largest lake vessels to be built may readily enter and clear and that the warehouse capacity should be extended and be provided with the requisite derricks and power plants to avoid delays in handling cargo. Unless this is done by concerted local action, Cleveland cannot expect to maintain her natural percentage of the lake carrying trade and her manufacturers will decrease, with corresponding shrinkage in values of real estate and other property.

107 North 35th St.
Philadelphia, Pa.

LEWIS M. HAUPT.

MR. HARRY COULBY'S ADDRESS

Mr. Harry Coulby, president and general manager of the Pittsburgh Steamship Co., was the last person to appear before the Merchant Marine Commission at its hearing in Cleveland and it was the consensus of opinion that his address, which was purely extempore, was the most convincing submitted to the commission. It came right off the bat, as it were, and was intensely practical throughout. There was no theorizing in it. His speech proved that a man should be well grounded in his trade before he begins to talk about it, but that when he does talk his wisdom becomes overpowering. It was evident, too, that the commission was profoundly impressed with Mr. Coulby's incisive and practical speech. Mr. Coulby's entire remarks have now been obtained from the government printing office and are given for the first time as follows:

"Talleyrand, who was considered a past-master of old-time diplomacy, said that diplomatic language was invented to conceal thought. I think the twentieth century diplomacy of America, under our present secretary of state, which calls a spade a spade and says what we mean has revolutionized old-time diplomacy. When we sent down to Washington from this state our most prominent business man as a senator, and the great question of crossing the isthmus came up, he applied to it business methods. He looked at it just exactly as though the great mercantile house of which he was the head was going to invest its own money to get its products to the consumer, and after he had worked at it along that line he carried you gentlemen in Washington off your feet, and the result was that a business man, applying business methods to a great public work, carried the day.

"I think the commerce of a nation should be handled the same as the commerce of a large corporation, and I would ask for just a moment to apply to this great question business methods, to find out just what the trouble is as a business man would look at it, and to see if we can find a remedy. If the rehabilitation of the merchant marine of America were exclusively for the benefit of the ship builder on the Atlantic coast, or the boilermaker or the seaman, and it should not go further, it would not be worth, gentlemen, the talk that has taken place in this room. As I take it, it is a means to an end. It has been truly said that a chain is only as strong as its weakest link. The purpose of a merchant marine or of a railroad is to connect up the consumer and the producer. We have heard a good deal of talk here to the effect that a nation should consume within itself what it produces. Let us take one of our products as its initial stage. Suppose a man is running a poultry farm. I would not like to ask that man to consume all the eggs that come from the farm, but just the minute you touch those eggs with the magic wand of transportation and turn them over to the man who is producing bacon both men get bacon and eggs. If it were

not for the magic wand of transportation one fellow would be bilious all the time eating eggs and the other fellow's liver would be out of kilter all the time from the fat of his own bacon.

"Gentlemen, you have gotten right down to the basic principle. We are trying to enlarge the market for American products. I want to see the Chinaman drop his chopsticks and eat a breakfast of buckwheat cakes and corn pone raised in the west.

"One thing I object to somewhat is this: You have patted on the back us people on the lakes and said to us, 'You have been subsidized; now, you should not say much.' I rather resent that. We did not get any more benefit out of these deep channels than did all the people of the United States; and by the rehabilitation of the merchant marine we will get just as much benefit as any other section of this country and no more. What have you done by appropriations for the benefit of these great lakes? You have made out of the far west a consumer of anthracite coal. Before you deepened these channels that coal was put in the cabinet to show people the kind of stuff they dug out of the ground in New York and Pennsylvania; and today we can take from Buffalo to Duluth, 1,000 miles, a ton of anthracite coal cheaper than you can get any man to take it off your sidewalk and put it down into your cellar.

"Do you not think the miner of anthracite coal in Pennsylvania and New York has had the advantages and the benefits of the deepened channels, when out in the northwest coal today is not a luxury, but a necessity? And what followed

in its train? You had to have a base-burner, did you not? Then by reason of this magic wand of transportation the family of the man out west began to come east, and they had to have other things. That is what it has done on these great lakes; and the only class of men that I have heard bewail the deepened channels are the old-time sailor men, talking about 'the days when we got \$4 a ton on ore from Marquette,' but they are dead and gone now.

"On this question of the merchant marine we all seem to be agreed on one point. The merchant marine is sick. It has dwindled from 85 per cent to 8 per cent. We have all looked over into its little bed and we see that it is very sick. We have not had very many prescriptions written out as to what we are to do. Let us find out why we want to rehabilitate it, and figure out, if we can, the best way to do it.

"As I take it, we are after the enlargement of our markets. We are trying to get commercial supremacy. There is only one way in which you can do it. You have got to get the stuff there before the other fellow will buy it. Eight years ago my attention was called in a most striking manner to this question of our merchant marine. I was coming across on one of the Atlantic liners from Europe, and in the smoking room of the steamer I became acquainted with two traveling men who had been abroad for two years and were just returning



MR. HARRY COULBY.

home. One of them had been down in Argentina representing the Deering Harvester Co.; the other had been out in South Africa representing a large firm in this state that was making steam shovels and mining machinery. I naturally asked them what had been the success of their business. They said they were very much discouraged. The men from Argentina said, 'The only way we can get our machines down there is to ship them over to England. When I went down to Argentina I had to get London exchange for my expenses, and the conditions are pretty difficult. On these regular lines our product has to pay a tribute in England before it gets out there. Consequently they beat us that much.' The same story was told me by the man who went to South Africa.

'Gentlemen, the transportation which connects up the consumer and the producer and which is the very life blood of commerce, is a science, pure and simple. It is done in no haphazard way. You must move the stuff in as near a direct line as you can. The railroads recognize that principle. Take a railroad folder and you will see the air line they draw from one city to another. Of course, if the cities are not in an exact line they just make a heavier line, so as to catch them; but they appreciate that point. In the transportation of a ton of freight, just the moment you put it down and pick it up you are adding to the cost of it, although it may be imperceptible. When you have a ton of freight going to Argentina from New York, and you take it to Liverpool and make it pay part of the expense of maintaining those magnificent quays and other appliances, and then bring it on the other side of the triangle in another ship and make it pay tribute to that ship, you are just simply putting it out of business.

'It was truly said here the other day that we have had the eagle up a little bit. We have waved the old flag, but there is not a great deal of sentiment or patriotism in business. When you talk about \$200,000,000 of business that we give to the other fellow it reminds me very forcibly of the true old saying, 'Everybody's business is nobody's business.' What would be done by a large corporation that had to pay half of \$200,000,000 or a fourth of \$200,000,000 on its product that it wanted to get to the consumer? What have they done? That is the best guide. What have these railroads done? They have established steamboat lines from their termini in the west to their termini in the east. They have an assured and regular service, so that their agents scattered all over the United States can say positively: 'We will give you a through bill of lading. We have sailings every day from Duluth and Chicago to Buffalo, and we have connections there,' and they get the business. It is necessary to have the connecting link assured.

'Three times in my experience of twenty years on these lakes I have seen the grain from the northwest backed on us, when the elevators in New York, the cars between New York and Buffalo, the elevators in Buffalo, the boats on the lakes and the elevators in Chicago and Duluth were blocked, so that neither the elevator, the railroad, or the ship could turn or stir. Why? Because we were waiting for the tramp ship to come over and get out stuff and take it to the consumer; and you will just simply recollect this, that when we want ships there is always a strong likelihood that the other fellow wants them too, and if he owns them they are sailing under the flag of his nation and he is very likely to catch them.

'What has been the result? You can not today get any man in Duluth or throughout this great country who can figure an absolute, sure connection right straight through to the consumer on the other side of the world. Just so long as you can not do that you can not get the market. The other fellow, who can assure the delivery, will get the market. How is it when you buy your groceries? Your wife goes in the department store and orders the meats and the vegetables for your dinner, and she says: 'I want them to come on your 3 o'clock delivery wagon, so that I will have them at 4 o'clock.'

You do not go to the fellow who says: 'Well, Mrs. So-and-so, John Smith does my delivering, but he is out now. He is at Lorain.' That is the whole sum and substance of it. It is a transportation proposition pure and simple.

'Where are you going for your relief? I think my friend Mr. Morris wrote out the best prescription I have heard for this sick child. Transportation is a science in this country, and there is no place in the world where inland transportation has been brought to the high stage of perfection it has reached here. There are men trained to the railroad business, and they do nothing else. They study it. They go after the products of the northwest. They have their agents like a network spread all over the country to pick it up. They take it to the seaboard, and they can not take it any farther.

'Gentlemen, get them together. See if they will not work with you and supply the link. Who is going to put money in it? Are we going to rehabilitate the merchant marine just simply for the benefit of the man who grows wheat rather than the man who makes butterine, the man who makes chairs, the man who makes machinery, and the men who make a thousand and one things that are made in this country? We are going to rehabilitate it for the benefit of them all. Now, tell me where the benefits are going to stop. Will they not come right down all along the line and take in all the people? They will all be directly benefited. Should they not all stand a part of the burden?

'They come here and say, 'We do not want to work for the wages that are paid on Swedish ships. We think it is an outrage to eat the food that is eaten on English ships.' We can not afford to build ships as cheaply as the other man because of the high cost of labor. All right. Let the American people make up the difference. You hear a great deal of talk about freedom. What does it amount to? Do you not protect yourself and your family? Do you not protect your house with insurance? Do you not with accident insurance protect your life against the acts of the other fellow? And still, when it comes to the nation the cry is, 'All free.' Anything that is free has not much value.

'If you protect yourself, your family, your house, your life, and your business, it is a pretty good thing for the nation to do. You need not pamper. You can protect; and I do not see any other way, gentlemen, but to carry out the suggestion of my friend Mr. Morris. How do we build ships here? We issue bonds. You can call it subsidy, bonus, land grant, water grant. Of course when you are in this section of the country do not call it franchise, because we cannot stand it when you mention that name; but call it anything you please; when you resolve it down, it means one thing—all the people contributing something for the benefit of all the people. I do not care by what name you call it. That does not make any difference.

'Your secretary last night put a thought in my mind that had never occurred to me before, and it is an important one. You can build ships and you can build engines. You can do it quickly; but you cannot make a sailor man, a captain, or an engineer in a day. It takes time; and as the American seaman does not want to work for Swedish wages, I would put over his hat a band reading, 'United States Naval Reserve,' and pay him the difference. Then he is there. He is trained, and if ever you want him you can get him. That is what they are doing on the other side. I do not see why we should not fight them with their own weapons. All the people in England are contributing to the merchant marine. Why should not all the people of the United States do the same thing? Then our two marines will be on the same plane, except that their child is of age and is sturdy and healthy. Ours has dwindled from 85 to 8, and is so awfully sick that I honestly thought here once or twice we were a gang of mourners.

'Probably you can work out the rehabilitation of the mer-

chant marine. Get a few steamship lines established to strategic points on the other side. Get the terminals, if necessary. Get your department of commerce and labor going. Get your consuls busy, instead of writing up reports that nobody reads. Let us adopt twentieth century methods. Suppose the Standard Oil Co. wanted to open up a market at some place and they had an agent there; he would get busy right away and see what the prospects were for doing business. Any other great industry would pursue the same course. You have just got to apply American transportation methods and American business methods to this proposition, as you did in the case of the Panama canal, and it will solve itself a good deal easier than you think.

"I have very little more to say. When the question of deepening the waterways on the great lakes was brought up in our houses of congress, there was a movement on the lakes of not over 5,000,000 or 6,000,000 tons of freight per annum. If it had been stated at that time what amount of money would have to be expended here, I question whether you would ever have started it. I do not believe you could ever have convinced any man that the amount of freight through these deep waterways would go within twenty years to over 50,000,000 tons. I do not believe anybody would have believed it. You have got to start this thing going. It makes but very little difference to the ultimate outcome whether you start it now or not. It will never down, because it is the nation's life. If you do not do it, all these products will backwater on us and spoil and go to waste, and no man will get the full measure of his production, because you have limited the exchange between nations. It applies just the same between nations as it does between individuals. What good would the eggs be to the poultry man if he could not get them to the man who raises bacon? His eggs would rot and spoil, and they would have no value.

"You have just simply got to do it. Whether you do it at this session of congress or not, in my judgment it is the most important question that is before the American people today."

LIVERPOOL SHIPPING LETTER

Liverpool, Nov. 5. Cheering accounts have just reached me of an improved ship building outlook on the east coast. During October, seven vessels of an aggregate tonnage of 26,250 tons were launched on the Wear, making the total for the ten months of the present year sixty-one vessels of 191,763 tons, as against forty-nine vessels of 150,105 tons launched during the corresponding period of last year. What is still more hopeful is the fact that more orders for steamers are being booked. Messrs. Richardson, Duck & Co. of Stockton who recently secured an order for three new ships, are now credited with a fourth, which is to be built to the order of Messrs. Lucas & Co. of Bristol. The Sunderland Shipbuilding Co. is reported to have secured one of the four steamers to be built for the Steamship Company Progress of Copenhagen. She is intended to carry about 2,500 tons, and is to be ready for delivery in the spring. The other three are understood to have been placed on the continent. At Blyth it is said a new steamer of 3,600 tons deadweight capacity, now ready, has been sold to Messrs. Hansen & Co. of Copenhagen for \$115,000. On the Clyde orders for new tonnage are being received which means work for a number of firms over the coming winter, and will further brighten ship building prospects.

The annual meeting of Richardson, Westgarth (Limited), held at Hartlepool this week is important for the statement which Sir Christopher Furness made regarding the development of the turbine industry at this company's establishment. It is clear that for land as well as for marine purposes the turbine is making rapid headway, and that in its manufacture, Richardson, Westgarth (Limited) are destined to take a very prominent place. In discussing the finances of the company,

Sir Christopher explained that the sum of \$250,000 shown in the previous balance sheet as being on deposit at interest was not now so placed, the whole of the money having been used in the erection of new turbine works, and other extensions. Their turbine shops, he claimed, would compare favorably with any in the country, and the demands on this department had also necessitated additions to their iron foundry. From the number of inquiries it was evident that steam turbines were considered by mining engineers as eminently suitable for the power installation of mines, possessing as they did high steam efficiency. Also cost of transport, foundations, erection, maintenance and supervision compared very favorably with the best reciprocating engines yet produced. He then detailed the work in hand, which indicated that there is no lack of orders for the turbines, and that the enterprise of the directors is already justified.

Speaking of turbines I am reminded that Messrs. W. Denny Bros. of Dumbarton, launched from their yard on Saturday last, a new turbine steamer, named Lauka, for the British India Steam Navigation Co. The principal dimensions of this ship are length, 275 ft.; breadth, 44 ft.; depth, 25 ft. 6 in. She is of the poop bridge and forecandle type, having accommodation for first-class passengers in the bridge, for the second-class in the poop, and for the crew in the forecandle. As the ship has fine lines, being intended to maintain a high rate of speed, there is only a limited amount of cargo carried, but the cargo appliances which consist of double winches at each hatchway enable the amount carried to be promptly handled. The turbines will be supplied by the Parsons Marine Steam Turbine Co.

Mr. A. Piers, the manager of the steamship lines of the Canadian Pacific Railway Co. is at present on a visit to this country in connection with important business matters and during this week he has been in Liverpool. His departure for Canada is expected in two or three weeks time, and on his return home it is anticipated that the order will be immediately placed for the two new steamers which are to be built for the Canadian Pacific Railway Co.

The Canadian sailings this week from the various British ports signal the close of the St. Lawrence season. These include the Allan liner Tunisian and the Canadian Pacific railway steamer Lake Manitoba from the Mersey, and the Allan liner Pretorian and the Donaldson liner Salacia from Glasgow. It is hoped that in future years when the ice-breaking steamers now built and building for the Canadian government have got to work seriously that the season in which the river is navigable will be extended considerably. During the past season the Canadian Pacific railway have maintained a weekly service, there having been altogether twenty-nine sailings. The shipments of live stock by the two Liverpool cattle steamers as well as by the British steamers, which have called at Liverpool, have compared favorably with the enormous shipments of the previous year, notwithstanding the Board of Trade restrictions and the fact that the three passenger steamers of the Liverpool service, the Lake Manitoba, Lake Champlain and Lake Erie did not carry live stock. The passenger traffic to Canada, as pointed out on several occasions, has been exceptionally brisk throughout the season, and the Canadian Pacific railway have had a very large share of it. One noticeable feature in connection with the emigrants, as far as this line is concerned, has been the absence of continental passengers, only British passengers having been booked by the company's Liverpool steamers.

Messrs. Woddel, Turner & Co. draw attention to the charges of the Suez canal in a letter from which I extract the following: "From the purely ship owning point of view, the charges are excessive and burdensome. To take a concrete case. A steamer of 7,000 tons deadweight capacity going through the canal, say to Colombo, will spend for that privilege as nearly as possible \$7,700. The gross freight she will earn at the

present time will be about \$11,375, so that some 60 per cent of the earnings goes in canal dues. And what do we get in return? The services of the canal company are restricted to the twenty-four hours which the average steamer takes to get through the canal. Towage, pilotage, boatmen, and use of electric light are all extra. Even the ordinary tonnage, on which dues are paid all over the world, is not acceptable. They have a special measurement nearly 50 per cent in excess of the usual net register tonnage upon which dues are levied. When we come to a modern P. & O. liner with a proportionately larger tonnage and smaller cargo capacity, we may take \$15,000 as the average cost in the canal. It may, of course, be argued that if ship owners object to pay the dues levied by the canal authorities they have the option of reaching their destination by making the tour of South Africa. But this is no justification, for the canal was constructed to facilitate navigation and not to rob owners, and the British representatives on the board ought to see what can be done to reduce the charges and so remove what is undoubtedly an extortionate toll upon all vessels bound to the east through the famous waterway.

It is the intention of the Allan Line to publish an ocean newspaper on board several vessels of their fleet, beginning with the two new turbine steamers, Virginia and Victorian, which are to be at work in February and March next. They will not be daily issues at first, though no doubt they will come in time.

The Anchor Line company have received a notification through the commissioner-general for Great Britain that the model of their twin-screw Columbia employed on the Glasgow and New York service and now on exhibition at St. Louis has been awarded a gold medal. Messrs. William Simons & Co., Ltd., the well known firm of dredge builders at Renfrew, have also been awarded the grand prize for their exhibit of dredge plant at the same exhibition.

RIVER AND HARBOR IMPROVEMENTS

Gen. Alexander McKenzie, chief of engineers, recommends in his annual report, made public today, an expenditure of \$2,444,257 for general river and harbor work during the fiscal year ending June 30, 1906. This is the recommendation with which the river and harbor committee of the house will start to construct its appropriation bill for the coming short session of congress. No bill was passed in the last session or the one before. Political contingencies and a large balance unexpended from former bills were responsible. A river and harbor bill is on the program for the coming session. In fact Chairman Burton and members of his committee have already completed some work toward the preparation of one. Much data has been collected and prepared. During the summer the committee made extensive inspection trips covering the north Atlantic coast, the Mississippi valley, the lake region and a portion of the gulf coast. Twenty-one million dollars is Gen. McKenzie's estimate of new work requiring to be authorized. He would have \$8,442,396 appropriated to proceed with continuing contracts, \$300,000 of surveys, \$2,250,000 for expenditures under the Mississippi river commission and a few small items brings up the total to \$30,386,913.

The general expenditures for river and harbor work during the fiscal year ending June 30, 1904, are given as \$20,063,000. Work of various kinds on the Mississippi took \$185,000, canals \$1,101,000 and other items swell the total to \$21,500,000. This work had the authorization of river and harbor bills passed more than two years ago.

WORLD'S WASTAGE OF VESSELS

The returns compiled by Lloyd's Register of British and Foreign Shipping show that 120 vessels of 153,623 tons were lost or destroyed during the quarter ended June 30, 1904. Of these vessels twenty-three of 32,739 tons were owned in

the United Kingdom; eight of 3,077 tons were owned in the British Colony; fourteen of 8,118 tons were owned by the United States; ten of 8,128 tons were owned by France; four of 9,861 tons by Germany; six of 8,286 tons by Italy; thirteen of 9,980 tons by Norway; six of 9,187 tons by Russia; four of 7,830 tons by Spain and three of 753 tons by Sweden. Of the total losses sixty-four of 77,449 net tons were steamers and fifty-six of 30,199 tons were sailing vessels.

CAMDEN ANCHORS

Numbered among the industries of Camden, Me., and standing foremost in the ranks is the manufacture of ship anchors. This business was established in 1866 by two brothers, H. E. and W. G. Alden, and in the face of strenuous opposition from their competitors, and in spite of difficulties attending the shipment of the huge forgings, which frequently weighed 8,000 lbs. each from the then practically cut off port of Camden, these pioneers of industry earned for themselves a prominent place in the commercial world and for their product a world-wide reputation for worth and utility.

Many hundreds of tons of anchors are shipped yearly from the works at Camden to all parts of the United States and Canada. Within the two years just past the United States government have purchased a hundred of these anchors to be placed on their torpedo boats, and only recently a large contract was placed with us by the United States government for a number of anchors for larger ships.

Many visitors are attracted to the place, it being one of the points of interest every visitor to the town takes in. It is indeed a novel sight. The huge masses of iron taken from the furnace like so much liquid fire and molded by the mammoth hammers into shapes that are the symbol of security to all seafaring men, and which will undoubtedly at some time be all that will stand between human lives destruction.

In 1901 the Anchor Works consolidated with the Rockland Machine Co., under the firm name of Camden Anchor-Rockland Machine Co., with headquarters at Rockland. The new management has in every respect maintained the high standards of their predecessors. Together with the Knox Marine gasoline engine, which they also manufacture, their business is growing very rapidly. The anchors are made in Camden as before while the engines are made at Rockland. The engine has met with great favor among the fishermen on the Atlantic coast and in return has opened up a large demand for the fishing anchors which are being rapidly turned out at their Camden plant as well as the commercial and government type.

The Falls Hollow Staybolt Co., Cuyahoga Falls, O., is in receipt of a nice order from the Kiushiu Railway Co. of Japan, for 28,000 lbs. 1 $\frac{1}{8}$ in. outside diameter by $\frac{1}{8}$ in. inside diameter, 18,000 lbs. 1 $\frac{1}{4}$ in. outside diameter by $\frac{1}{8}$ in. inside diameter, 1,200 lbs. 1 $\frac{3}{8}$ in. outside diameter by $\frac{1}{8}$ in. inside diameter, Falls Hollow round bars, 10 ft. long, to be made of the same quality high grade double refined charcoal iron as previous shipments received from the company. The Kiushiu Railway Co. have made severe service tests of the company's staybolt iron which have resulted entirely satisfactory and the railway is consequently now ordering the product in car lots. The company is also shipping large quantities of our hollow bars to other railroads of Japan and the Japanese government. The Norwegian State Railway Co. are using Falls Hollow iron exclusively for staying the fireboxes of their locomotives. The company is also receiving numerous inquiries from other European railroads.

The Coates Clipper Manufacturing Co., Worcester, Mass., has just put out a little booklet concerning the Coates universal link ball-bearing flexible shaft.



VOL. XXX.

CLEVELAND, O., NOVEMBER 17, 1904.

No. 20.

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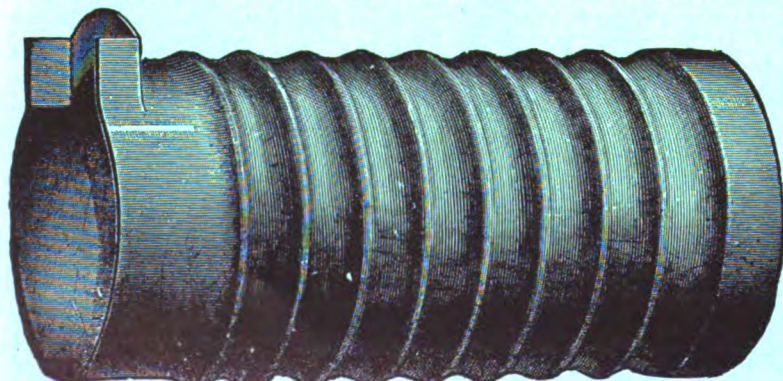
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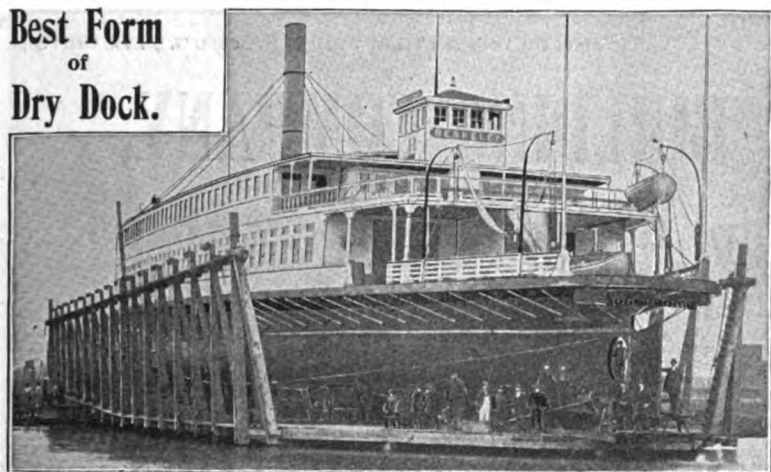
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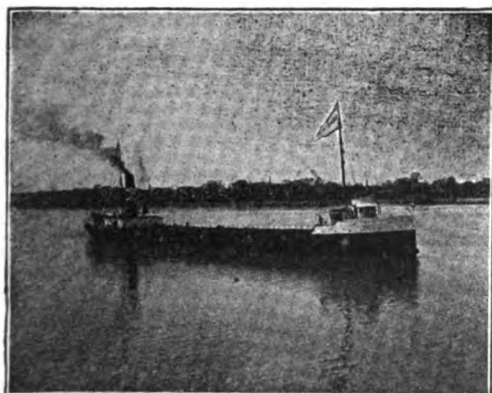
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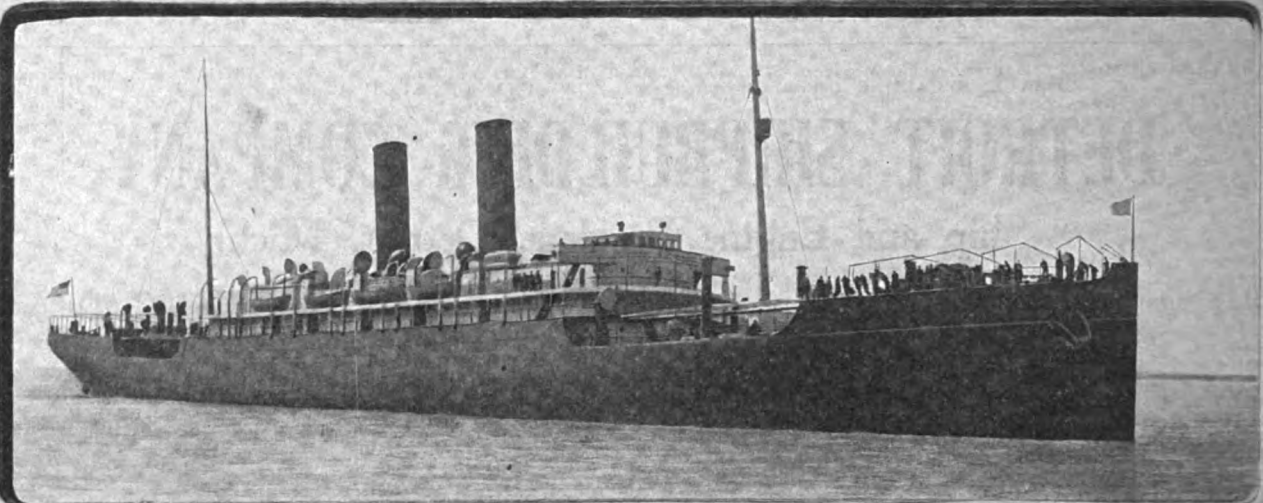
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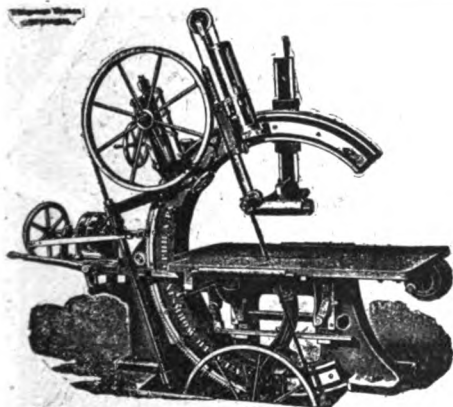
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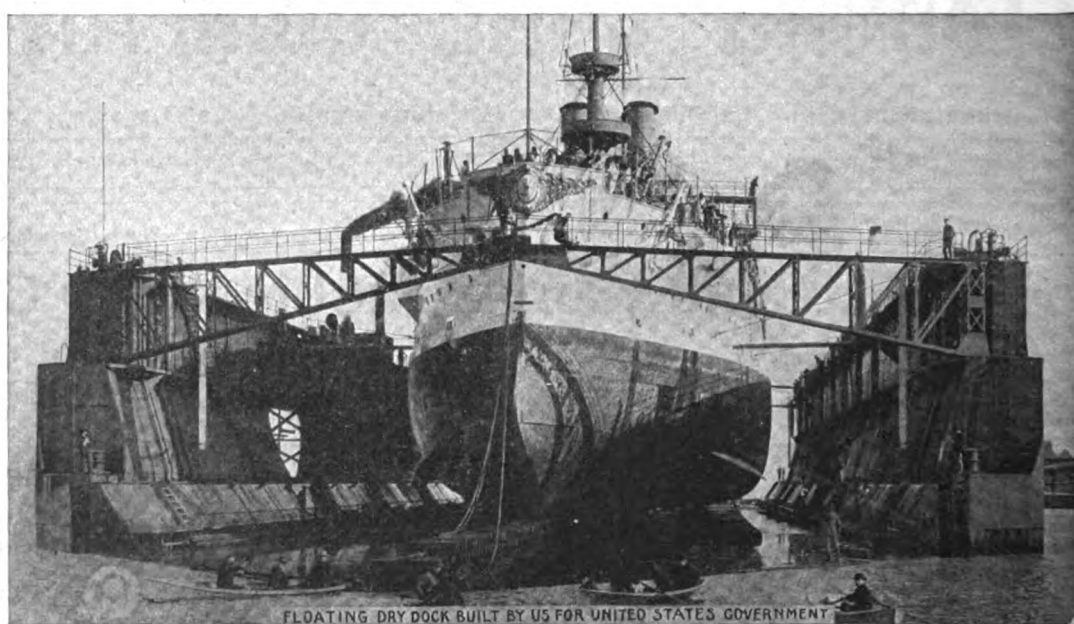
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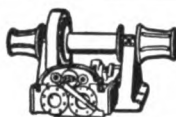
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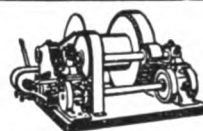
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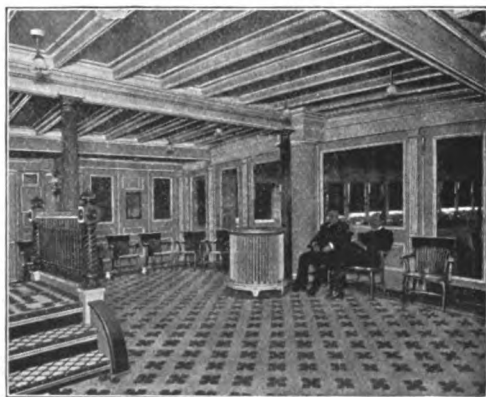
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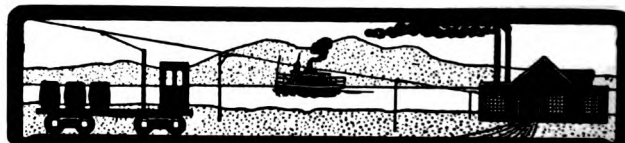
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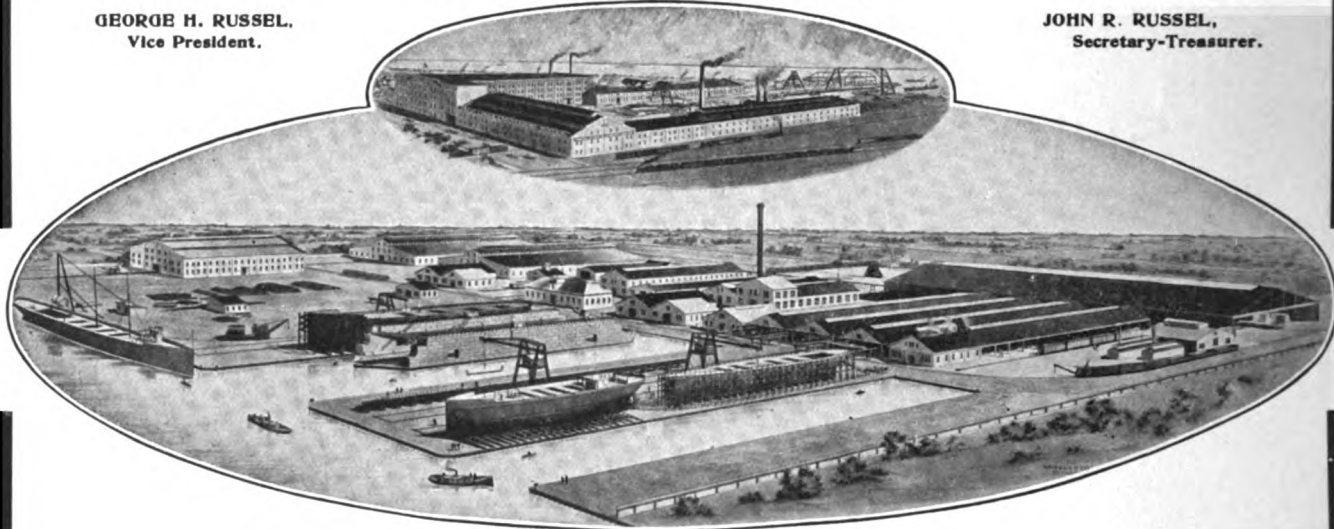
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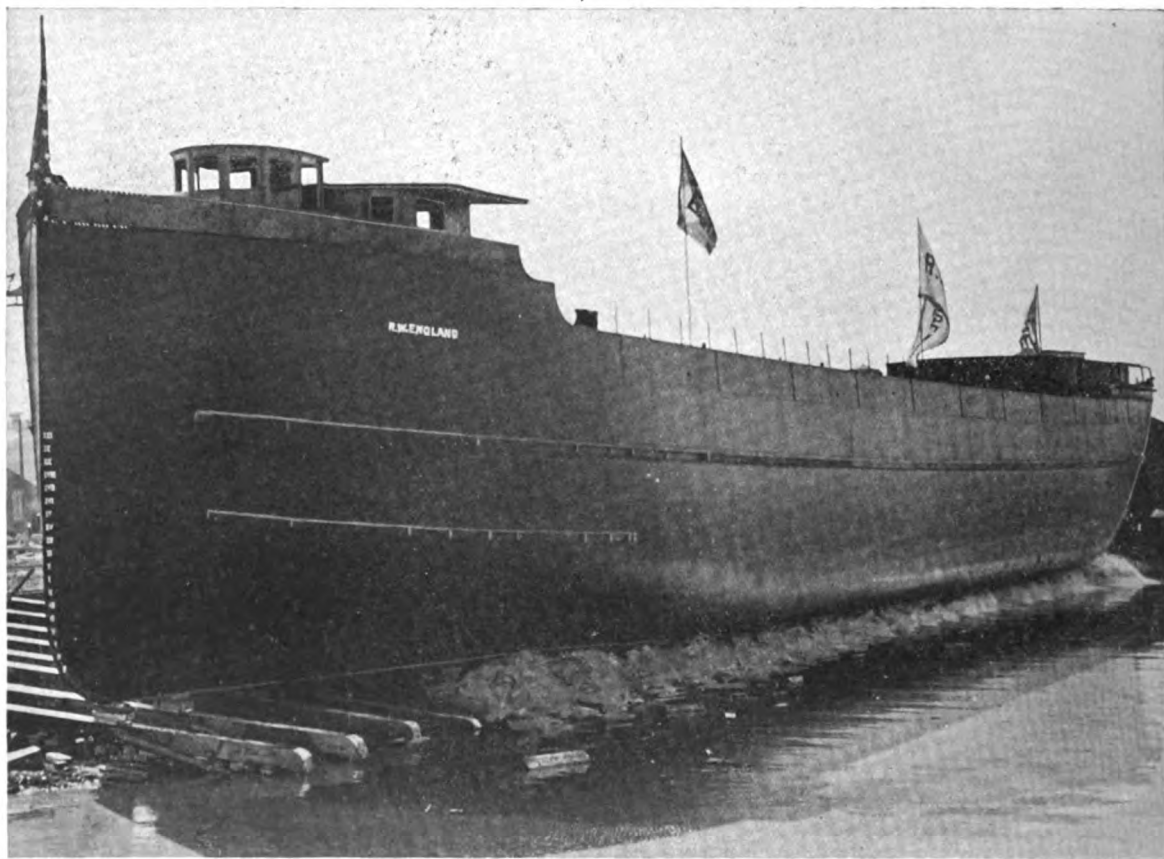
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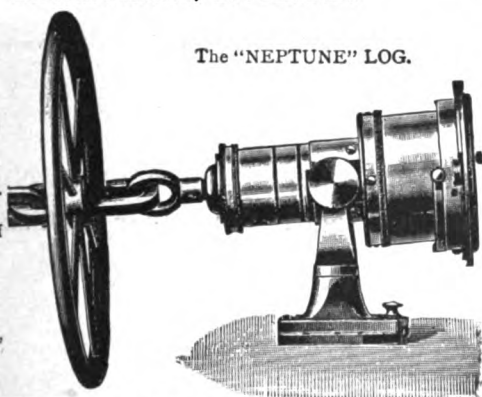
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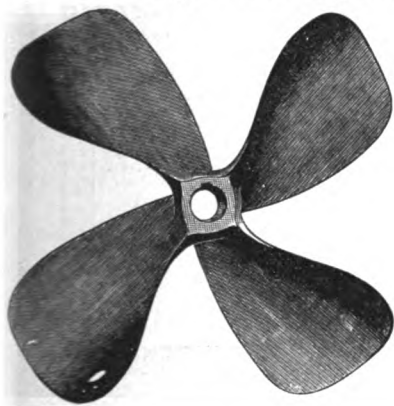
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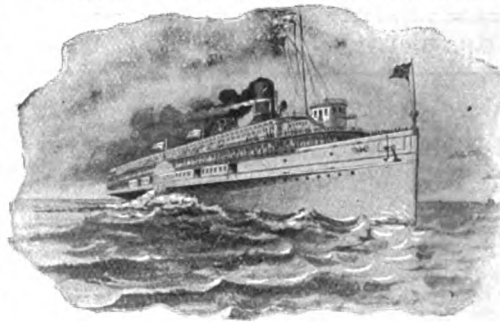
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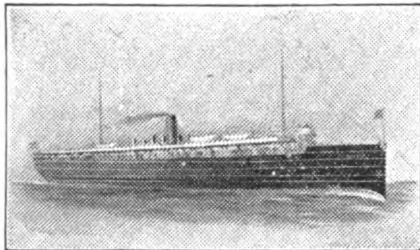
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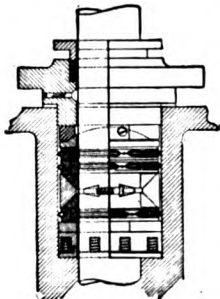


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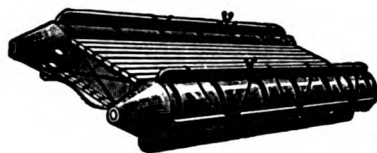
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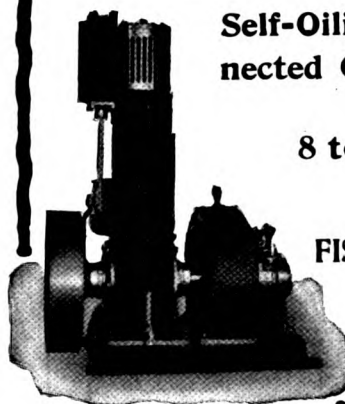
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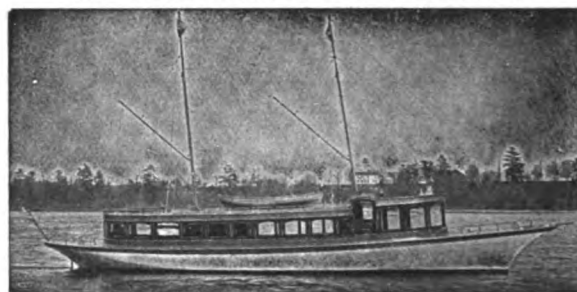
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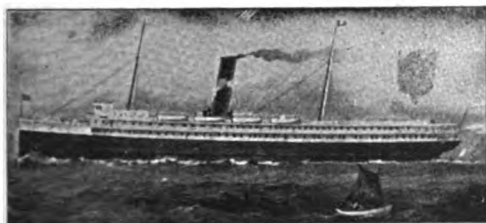
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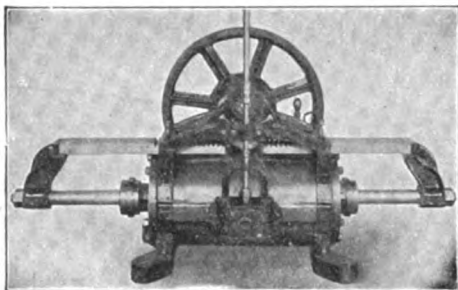
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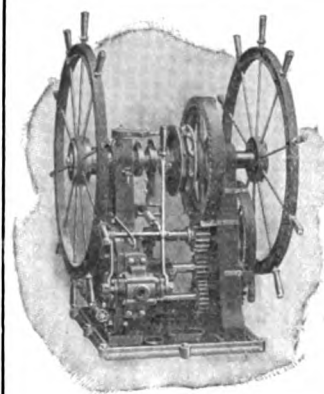
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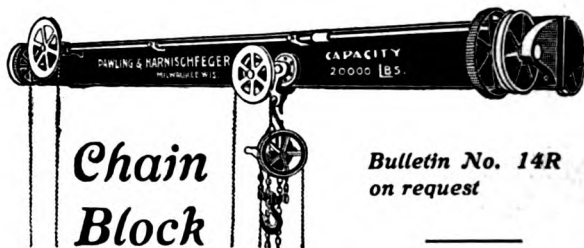
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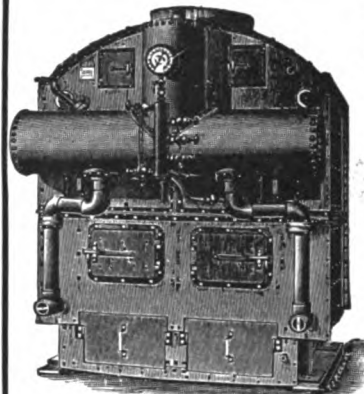
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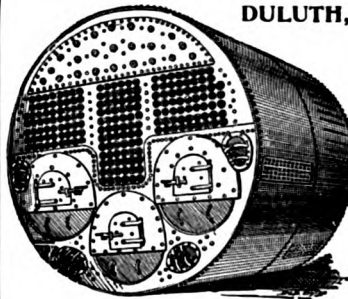
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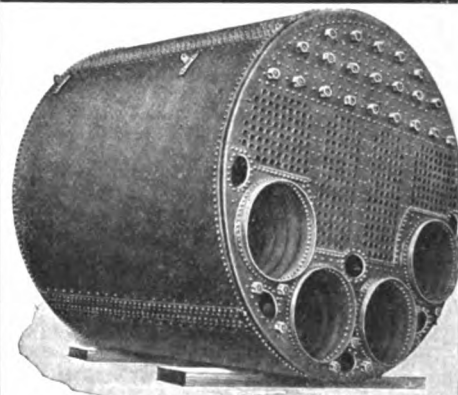


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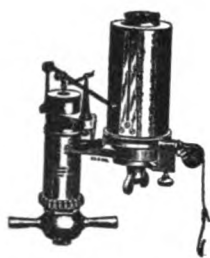
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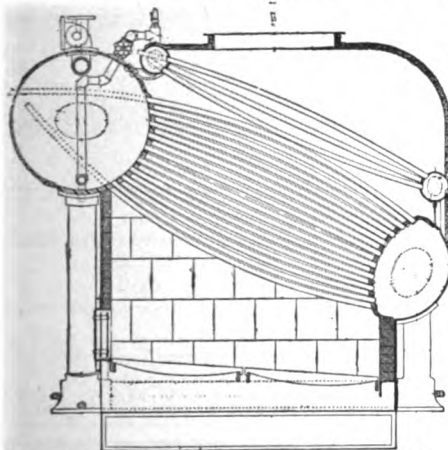
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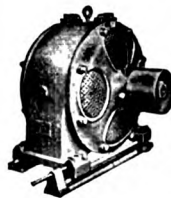
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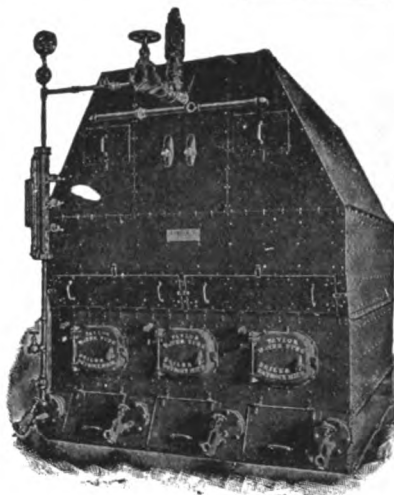
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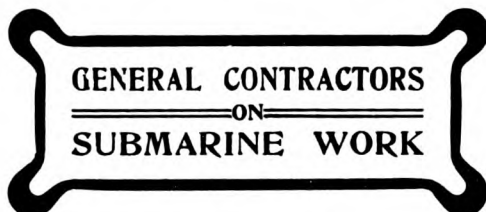
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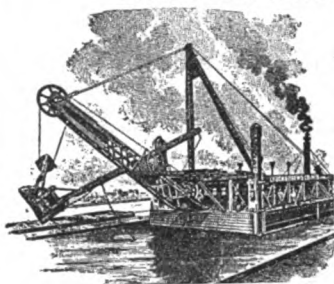
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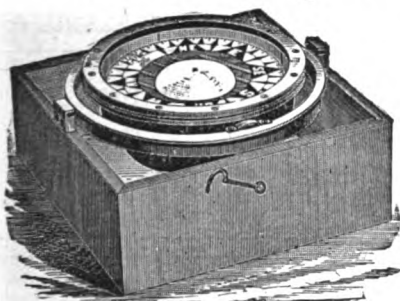
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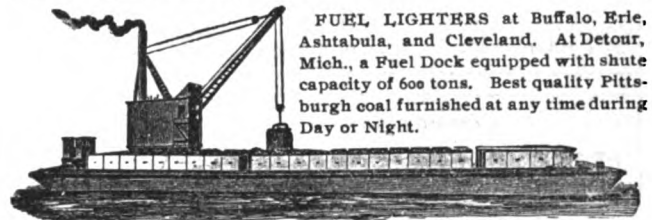
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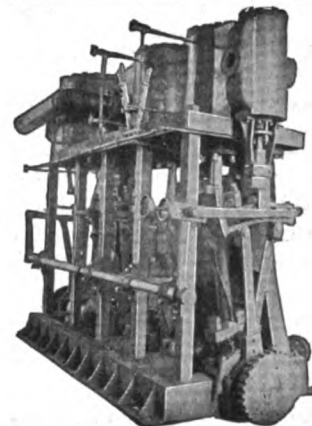
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 Maritime Bldg., New York.
 NEW YORK. DETROIT.

Buyers' Directory of the Marine Trade

For a more complete classification than that represented by advertisers in the Marine Review, see the BLUE BOOK OF AMERICAN SHIPPING, marine and naval directory of the United States, published by the Marine Review, 39-41 Wade Bldg., Cleveland.

See accompanying index of Advertisers for full addresses of concerns in this directory.

AIR COMPRESSORS, AIR HOISTS, ETC.

Dake Engine Co.....Grand Haven, Mich.
Great Lakes Engineering Works.....Detroit.
Mietz, Aug.New York.

AIR PORTS, DEAD LIGHTS, ETC.

Marine Mfg. & Supply Co.....New York.

AIR PUMPS AND APPLIANCES.

Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.

ANCHORS.

Baldt Anchor Co.....Chester, Pa.
Bowers, L. M. & Co.....Binghamton, N. Y.
DeGrauw, Aymar & Co.....New York.
Seaboard Steel Casting Co.....Chester, Pa.

ANTI-FOULING AND ANTI-CORROSIVE COMPOSITION FOR STEEL VESSELS.

Holzappel's American Composition Co..New York.

ANTI-FRICTION METALS.

Cramp, Wm. & Sons.....Philadelphia.
Victor Metals Co.....Braintree, Mass.

ARTIFICIAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Cleveland.
Great Lakes Engineering Works.....Detroit.
Sturtevant, B. F., Co.....Hyde Park, Mass.

ASH EJECTORS.

Great Lakes Engineering Works.....Detroit.

ATTORNEYS AND PROCTORS IN ADMIRALTY.

Gilchrist, Albert J.....Cleveland.
Goulder, Holding & Masten.....Cleveland.
Hoyt, Dustin & Kelley.....Cleveland.
Kremer, C. E.....Chicago.
MacDonald, Ray G.....Chicago.
Potter & Potter.....Buffalo.
Shaw, Warren, Cady & Oakes.....Detroit.
White, Johnson, McCaslin & Cannon Cleveland.

BAROMETERS, MARINE GLASSES, ETC.

Ritchie, E. S. & Sons.....Brookline, Mass.

BELTING, RUBBER.

New York Belting & Packing Co....New York.

BLOCKS, SHEAVES, ETC.

Boston & Lockport Block Co....Boston, Mass.
Cleveland Block Co.....Cleveland.

BLOWERS.

Sturtevant, B. F. Co.....Hyde Park, Mass.

BOAT BUILDERS.

Dren, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, David.....New York.
Lane & DeGrootLong Island City, N. Y.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co....St. Joseph, Mich.
Willard, Chas. P. & Co.....Chicago.

BOILER COMPOUNDS.

Dearborn Drug & Chemical Works....Chicago.

BOILER MANUFACTURERS.

Almy Water Tube Boiler Co.Providence, R. I.
American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Babcock & Wilcox Co.....New York.
Bertram Engine Works Co., Ltd.Toronto, Can.
Chicago Ship Building Co.....Chicago.
Cramp, Wm. & Sons.....Philadelphia.
DeLauney, Belleville & Co..St. Denis, France.
Detroit Ship Building Co.....Detroit.
Fletcher, W. A. & Co.....Hoboken, N. J.
Fore River Shipbuilding Co.....Quincy, Mass.
Georgian Bay Engineering Works.....
.....Midland, Ont.
Great Lakes Engineering Works.....Detroit.

BOILER MANUFACTURERS—Continued.

Yenks Ship Building Co....Port Huron, Mich.
Kingsford Foundry & Machine Works....
.....Oswego, N. Y.
Maryland Steel Co.....Sparrows Point, Md.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher Water Tube Boiler Co....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
New York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co.....
.....Duluth, Minn.
Roberts Safety Water Tube Boiler Co.....
.....New York.
Stirling, The Co.....Chicago.
Superior Ship Building Co.....Superior, Wis.
Taylor Water Tube Boiler Co.....Detroit.
Union Machine & Boiler Co.....Cleveland.
United States Ship Building Co....New York.
Willard, Chas. P. & Co.....Chicago.

BOILER RIVETS.

Bourne-Fuller Co.....Cleveland.

BOILER STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.

Falls Hollow Staybolt Co..Cuyahoga Falls, O.

BRASS AND BRONZE CASTINGS.

Cramp, Wm. & Sons.....Philadelphia.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Lunkenheimer Co.Cincinnati.
Macbeth Iron Co.....Cleveland.
Victor Metals Co.....Braintree, Mass.

BRIDGES, BUILDERS OF.

Scherzer Rolling Lift Bridge Co....Chicago.

BUCKETS, ORE AND COAL.

Brown Hoisting & Conveying Machine Co.....
.....Cleveland.
Macbeth Iron Co.Cleveland.
McMyler Mfg. Co.....Cleveland.

CABIN AND CABINET FINISHING WOODS.

Martin-Barriss Co.....Cleveland.

CAPSTANS.

American Ship Windlass Co..Providence, R. I.
Hyde Windlass Co.....Bath, Me.
Marine Mfg. & Supply Co.....New York.

CEMENT, IRON FOR REPAIRING LEAKS.

Smooth-On Mfg. Co.....Jersey City, N. J.

CHAINS.

Lebanon Chain Works.....Lebanon, Pa.

CHAIN HOISTS.

Boston & Lockport Block Co....Boston, Mass.
Dake Engine Co.....Grand Haven, Mich.

CHARTS.

Penton Publishing Co.....Cleveland.
Potter, J. D.....London.

CLOCKS (Marine and Ship's Bell) AND CHRONOMETERS.

Ashton Valve Co.....Boston.
Ritchie, E. S. & Sons.....Brookline, Mass.
Standard Gauge Mfg. Co....Syracuse, N. Y.

COAL PRODUCERS AND SHIPPERS.

Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.

COAL AND ORE HANDLING MACHINERY.

Brown Hoisting Machinery Co. (Inc.) ..
.....Cleveland.
Macbeth Iron Co.....Cleveland.
McMyler Mfg. Co.....Cleveland.

COMPASSES.

Ritchie, E. S. & Sons.....Brookline, Mass.

COMPOSITIONS FOR SHIP'S BOTTOMS.

Holzappel's American Compositions Co..New York.

CONCRETE MIXERS.

Contractors Supply & Equipment Co..Chicago.

CONDENSORS.

Great Lakes Engineering Works... Detroit.
Thropp & Sons Co., John E....Trenton, N. J.

CONTRACTORS SUPPLIES.

Contractors Supply & Equipment Co., Chicago.

CONTRACTORS FOR PUBLIC WORKS.

Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.....
.....Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros.Sault Ste. Marie, Mich.
Lake Superior Contracting & Dredging Co.....
.....Duluth, Minn.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H..Milwaukee.
Sullivan, M.Detroit.

CORDAGE.

Baker & Co., H. H.....Buffalo.
DeGrauw, Aymar & Co.....New York.
Upson-Walton Co.....Cleveland.

CORK JACKETS AND RINGS.

Armstrong Cork Co.....Pittsburg, Pa.
Kahnweiler's Sons, D.....New York.

COURSE FINDER.

Field's Patent Course Finder.....Cleveland.

CHAIN CONVEYORS, HOISTS.

Brown Hoisting Machinery Co. (Inc.)....
.....Cleveland.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

CRANES, TRAVELING.

Brown Hoisting Machinery Co....Cleveland.
McMyler Mfg. Co.....Cleveland.
Pawling & Harnischfeger.....Milwaukee.

DIVING APPARATUS.

Morse, A. J. & Son.....Boston.
Schrader's Son, A.....New York.

DREDGING CONTRACTORS.

Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.....
.....Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros.Sault Ste. Marie, Mich.
Lake Superior Contracting & Dredging Co.....
.....Duluth, Minn.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H..Milwaukee.
Sullivan, M.Detroit.

DRYING APPARATUS.

Sturtevant, B. F., Co.....Hyde Park, Mass.

DRY DOCKS.

American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Buffalo Dry Dock Co.....Buffalo.
Chicago Ship Building Co.....Chicago.
Craig Ship Building Co.....Toledo, O.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co.....
.....Newport News, Va.
Shipowners Dry Dock Co.....Chicago.
Superior Ship Building Co....Superior, Wis.

Buyers' Directory of the Marine Trade.—Continued.

ELECTRIC HOISTS AND CRANES.

Fisher Electrical Works.....Detroit.
General Electric Co.....Schenectady, N. Y.
Pawling & Harnischfeger.....Milwaukee.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

ELECTRIC LIGHT AND POWER PLANTS.

Fisher Electrical Works.....Detroit.
General Electric Co.....Schenectady, N. Y.
Mietz, Aug.New York.
Sturtevant, B. F. Co.....Hyde Park, Mass.
Thropp & Sons, John E.....Trenton, N. J.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

ENGINE BUILDERS, MARINE.

American Ship Building Co.....Cleveland.
Atlantic Works.....East Boston, Mass.
Bertram Engine Works Co., Ltd.
.....Toronto, Can.
Chicago Ship Building Co.....Chicago.
Chase Machine Co.....Cleveland.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Dake Engine Co.....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit.
Fletcher, W. & A. Co.....Hoboken, N. J.
Fore River Shipbuilding Co.....Quincy, Mass.
Great Lakes Engineering Works, Detroit, Mich.
Hall Bros.Philadelphia.
Jenks Ship Building Co.....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Maryland Steel Co.....Sparrows Point Md.
Mietz, Aug.New York.
Milwaukee Dry Dock Co.....Milwaukee.
Mosher, Chas. D.....New York.
Moulton Steering Engine Co.....New York.
Newport News Ship Building Co.....
.....Newport News, Va.
Nsw York Shipbuilding Co.....Camden, N. J.
Northwestern Steam Boiler & Mfg. Co.....
.....Duluth, Minn.
Roach's Ship YardChester, Pa.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co.....Superior, Wis.
Thropp, J. E. & Sons Co.....Trenton, N. J.
Trout, H. G.....Buffalo.
Willard, Chas. P. & Co.....Chicago.

ENGINE ROOM TELEGRAPH, CALL BELLS, ETC.

Cory, Chas. & Son.....New York.
Marine Mfg. Supply Co.....New York.

ENGINE TESTING.

Kreer & Parsons.....Chicago.

ENGINEERING SPECIALTIES AND SUPPLIES.

Crane Co.....Chicago.
Kieley & Mueller.....New York.
Lunkenheimer Co.....Cincinnati.
New York Belting & Packing Co.....New York.
Northwestern Steam Boiler & Mfg. Co.....
.....Duluth, Minn.

ENGINEERS, MARINE, MECHANICAL, CONSULTING.

Hynd, Alexander.....Cleveland.
Hunt, Robt. W. & Co.....Chicago.
Kidd, Joseph.....Duluth, Minn.
Kreer & Parsons.....Chicago.
Lovejoy, H. O.....Buffalo.
Matteson & Drake.....Philadelphia.
Mosher, Chas. D.....New York.
Nacey, James.....Cleveland.
Rice, Henry.....Buffalo.
Roelker, H. B.....New York.
Sadler, Perkins & Field.....New York.
Wood, W. J.....Chicago.

FANS FOR VENTILATION, EXHAUST, ETC.

Sturtevant, B. F. Co.....Hyde Park, Mass.

FEED WATER PURIFIERS AND HEATERS.

Reilly Repair and Supply Co., Jas.....New York.
Ross Valve Co.....Troy, N. Y.

FIXTURES FOR LAMPS, OIL OR ELECTRIC.

General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

FORGES.

Sturtevant, B. F. Co.....Boston.

FORGINGS FOR CRANK, PROPELLER OR THRUST SHAFTS, ETC.

Cleveland City Forge & Iron Co.....Cleveland.
Fore River Shipbuilding Co.....Quincy, Mass.
Macbeth Iron Co.....Cleveland.

FLUE WELDING.

Fix's, S. Sons.....Cleveland.

FUEL ECONOMIZERS.

Sturtevant Co., B. F.....Hyde Park, Mass.

FUELING COMPANIES AND COAL DEALERS.

Hanna, M. A. & Co.....Cleveland.
Ironville, Dock & Coal Co.....Toledo, O.
Parker Bros. Co., Ltd.....Detroit.
Picklands, Mather & Co.....Cleveland.
Pittsburg Coal Co.....Cleveland.
Smith, Stanley B., & Co.....Detroit.
Smith Coal & Dock Co., Stanley B. Toledo, O.

FURNACES FOR BOILERS.

Continental Iron Works.....New York.

GASKETS, RUBBER.

New York Belting & Packing Co.....New York.

GAS BUOYS.

Safety Car Heating & Lighting Co.....New York.

GAS AND GASOLINE ENGINES.

Chase Machine Co.....Cleveland.
Georgian Bay Engineering Works.....
.....Midland, Ont.
Reliance Mfg. Co.....Providence, R. I.

GAUGES, STEAM AND VACUUM.

American Steam Gauge & Valve Mfg. Co.
.....Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co.....Cincinnati.
Standard Gauge Mfg. Co.....Syracuse, N. Y.

GAUGES, WATER.

Bonner & Co., Wm. T.....Boston.
Lunkenheimer Co.....Cincinnati, O.
Standard Gauge Mfg. Co.....Syracuse, N. Y.

GRAPHITE.

Dixon Crucible Co., Joseph.....Jersey City, N. J.

HAMMERS, STEAM.

Chase Machine Co.....Cleveland.

HEATING APPARATUS.

Sturtevant, B. F. Co.....Hyde Park, Mass.

HOISTS FOR CARGO, ETC.

American Ship Building Co.....Cleveland.
Brown Hoisting Machinery Co. (Inc.).....
.....Cleveland.
Chase Machine Co.....Cleveland.
General Electric Co.....New York.
Georgian Bay Engineering Works.....
.....Midland, Ont.
Hyde Windlass Co.....Bath, Me.
McMyler Mfg. Co.....Cleveland.
Marine Iron Co.....Bay City.
Mietz, Aug.New York.
Pawling & Harnischfeger.....Milwaukee.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

HOLLOW STAYBOLT IRON.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

HOSE, RUBBER.

New York Belting & Packing Co.....New York.

HYDRAULIC DREDGES.

Great Lakes Engineering Works.....Detroit.

HYDRAULIC TOOLS.

Watson-Stillman Co., The.....New York.

ICE MACHINERY.

Great Lakes Engineering Works.....Detroit.
Roelker, H. B.....New York.

INDICATORS FOR STEAM ENGINES.

American Steam Gauge Co.....Boston.
Ashton Valve Co.....Boston.

INJECTORS.

American Injector Co.....Detroit.
Crane Co.....Chicago.
Jenkins Bros.....New York.
Lunkenheimer Co.....Cincinnati.
Penberthy Injector Co.....Detroit, Mich.

INSURANCE, MARINE.

Elphicke, C. W. & Co.....Chicago.
Fleming & Co., P. H.....Chicago.
Frankfort Marine, A. & P. G. Ins. Co.....
.....New York.

INSURANCE, MARINE—Continued.

Gilchrist & Co., C. P.....Cleveland.
Hawgood & Co., W. A.....Cleveland.
Helm & Co., D. T.....Duluth.
Hutchinson & Co.....Cleveland.
McCarthy, T. R.....Montreal.
McCurdy, Geo. L.....Chicago.
Mitchell & Co.....Cleveland.
Parker Bros. Co., Ltd.....Detroit.
Peck, Chas. E. & W. F. New York & Chicago.
Prindiville & Co.....Chicago.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.
Voss, F. D.....New York.

IRON ORE AND PIG IRON.

Bourne-Fuller Co.....Cleveland, O.
Hanna, M. A. & Co.....Cleveland.
Pickands, Mather & Co.....Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Georgian Bay Engineering Works.....
.....Midland, Ont.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P.....Chicago.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong, Cork Co.....Pittsburg.
Drein, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, D.....New York.

LIGHTS, SIDE AND SIGNAL.

Russell & Watson.....Buffalo.

LOGS.

Walker & Sons, ThomasBirmingham, Eng.
Also Ship Chandlers.

LUBRICATING GRAPHITE.

Dixon Crucible Co., Joseph.....Jersey City, N. J.

LUBRICATORS.

Crane Co.....Chicago.
Lunkenheimer Co.....Cincinnati.

LUMBER.

Martin-Barriss Co.....Cleveland.

MACHINISTS.

Chase Machine Co.....Cleveland.
Hickler Bros.....Sault Ste. Marie, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Union Machine & Boiler Co.....Cleveland.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc.....Philadelphia.

MARINE RAILWAYS.

Hickler Bros.....Sault Ste. Marie, Mich.

MARINE RAILWAYS, BUILDERS OF.

Crandall & Son, H. I.....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works.....Detroit.
Sturtevant, B. F. Co.....Hyde Park, Mass.

METALLIC PACKING.

Katzenstein, L. & Co.....New York.

METAL POLISH.

Bertram's Oil Polish Co.....Boston.

MOTORS, GENERATORS—ELECTRIC.

Fisher Electrical Works.....Detroit.
General Electric Co.....Schenectady, N. Y.
Sturtevant, B. F. Co.....Hyde Park, Mass.
Westinghouse Electric & Mfg. Co.....
.....Pittsburg, Pa.

Buyers' Directory of the Marine Trade.—Continued.

NAUTICAL INSTRUMENTS.

Ritchie, E. S., & Sons.....Brookline, Mass.

NAUTICAL SCHOOLS.

Chicago Nautical School.....Chicago.

NAVAL ARCHITECTS.

Hynd, Alexander.....Cleveland.
 Kidd, Joseph.....Duluth, Minn.
 Kreef & Parsons.....Chicago.
 Lovejoy, H. O.....Buffalo.
 Matteson & Drake.....Philadelphia.
 Mosher, Chas. D.....New York.
 Nacey, James.....Cleveland.
 Rice, Henry.....Buffalo.
 Sadler, Perkins & Field.....New York.
 Wood, W. J.....Chicago.

OAKUM.

DeGrauw, Aymar & Co.....New York.
 Stratford, Oakum Co.....Jersey City, N. J.

OIL ENGINES.

Mietz, Aug.....New York.

OILS AND LUBRICANTS.

Dixon Crucible Co., Joseph.....Jersey City, N. J.
 Standard Oil Co.....Cleveland.

PACKING.

Crane Co.....Chicago.
 Jenkins Bros.....New York.
 Katzenstein, L. & Co.....New York.
 New York Belting & Packing Co.....New York.

PACKING TOOL.

Matteson & Drake.....Philadelphia.

PAINTS.

Baker, Howard H. & Co.....Buffalo.
 Detroit Varnish Co.....Detroit.
 Detroit White Lead Works.....Detroit.
 New Jersey Zinc Co.....New York.
 Upson-Walton Co.....Cleveland.

PATTERN SHOP MACHINERY.

Atlantic Works, Inc.....Philadelphia.

PILE DRIVING AND SUBMARINE WORK.

Buffalo Dredging Co.....Buffalo.
 Chicago & Gt. Lakes Dredge & Dock Co.....Chicago.
 Dunbar & Sullivan Dredging Co.....Buffalo.
 Fitz-Simons & Connell Co.....Chicago.
 Hickler Bros.....Sault Ste. Marie, Mich.
 Lake Superior Contracting & Dredging Co.....Duluth, Minn.
 Parker Bros. Co., Ltd.....Detroit.
 Smith Co., L. P. & J. A.....Cleveland.
 Starke Dredge & Dock Co., C. H.....Milwaukee.
 Sullivan, M.....Detroit.

PIPE, WROUGHT IRON.

Bourne-Fuller Co.....Cleveland, O.
 Crane Co.....Chicago.
 Macbeth Iron Co.....Cleveland.

PLANING MILL MACHINERY.

Atlantic Works, Inc.....Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.

Bourne-Fuller Co.....Cleveland, O.
 Otis Steel Co.....Cleveland.

PNEUMATIC TOOLS.

Allen, John F.....New York.

POLISH FOR METALS.

Bertram's Oil Polish Co.....Boston.

PRESSURE REGULATORS.

Kieley & Mueller.....New York.
 Ross Valve Co.....Troy, N. Y.

PROPELLER WHEELS.

American Ship Building Co.....Cleveland.
 Atlantic Works.....East Boston, Mass.
 Cramp, Wm. & Sons.....Philadelphia.
 Detroit Ship Building Co.....Detroit.
 Fore River Shipbuilding Co.....Quincy, Mass.
 Great Lakes Engineering Works.....Detroit.
 Hyde Windlass Co.....Bath, Me.
 Jenks Ship Building Co.....Port Huron, Mich.
 Lockwood Mfg. Co.....East Boston, Mass.
 Macbeth Iron Co.....Cleveland.
 Milwaukee Dry Dock Co.....Milwaukee.
 Newport News Ship Building Co.....Newport News, Va.
 Phosphor Bronze Smelting Co., Ltd.....Philadelphia.
 Roelker, H. B.....New York.
 Sheriffs Mfg. Co.....Milwaukee.
 Superior Ship Building Co.....Superior, Wis.
 Thropp & Sons Co., J. E.....Trenton, N. J.
 Trout, H. C.....Buffalo.
 United States Ship Building Co.....New York.

PROJECTORS, ELECTRIC.

General Electric Co.....Schenectady, N. Y.
 Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

PUMPS FOR VARIOUS PURPOSES.

Blake, Geo. F., Mfg. Co.....New York.
 Great Lakes Engineering Works.....Detroit.
 Kingsford Foundry & Machine Works.....Oswego, N. Y.

PUNCHES, RIVETERS, SHEARS.

Allen, John F.....New York.

RANGES.

Russell & Watson.....Buffalo.

REFRIGERATING APPARATUS.

Great Lakes Engineering Works.....Detroit.
 Roelker, H. B.....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.

Great Lakes Register.....Cleveland.
 Record of American & Foreign Shipping.....New York.

REPAIRS—ENGINE AND BOILER.

(See also Boiler Manufacturers and Engine Builders.)

Georgian Bay Engineering Works.....Midland, Ont.

RIVETING MACHINES.

Allen, John F.....New York.

RIVETS, STEEL FOR SHIPS AND BOILERS.

Bourne-Fuller Co.....Cleveland, O.

SAFETY VALVES.

American Steam Gauge & Valve Mfg. Co.....Boston.
 Ashton Valve Co.....Boston.
 Crane Co.....Chicago.
 Lunkenheimer Co.....Cincinnati.

SAIL MAKERS.

Baker, Howard H. & Co.....Buffalo.
 Upson-Walton Co.....Cleveland.
 Wilson & Silsby.....Boston.

SALVAGE COMPANIES.

See Wrecking Companies.

SCHOOLS—NAVIGATION.

Chicago Nautical School.....Chicago.

SEARCH LIGHTS.

General Electric Co.....Schenectady, N. Y.
 Westinghouse Electric & Mfg. Co.....Pittsburg, Pa.

SHEARS.

See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.

Bourne-Fuller Co.....Cleveland, O.
 Otis Steel Co.....Cleveland.

SHIP BUILDERS.

American Ship Building Co.....Cleveland.
 Atlantic Works.....East Boston, Mass.
 Bertram Engine Works Co., Ltd. Toronto, Can.
 Buffalo Dry Dock Co.....Buffalo.
 Cramp, Wm. & Sons.....Philadelphia.
 Craig Ship Building Co.....Toledo, O.
 Chicago Ship Building Co.....Chicago.
 Detroit Ship Building Co.....Detroit.
 Fore River Shipbuilding Co.....Quincy, Mass.
 Great Lakes Engineering Works.....Detroit.
 Jenks Ship Building Co.....Port Huron, Mich.
 Lockwood Mfg. Co.....East Boston, Mass.
 Manitowoc Dry Dock Co.....Manitowoc, Wis.
 Maryland Steel Co.....Sparrows Point, Md.
 Milwaukee Dry Dock Co.....Milwaukee.
 Newport News Ship Building Co.....Newport News, Va.
 New York Shipbuilding Co.....Camden, N. J.
 Roach's Ship Yard.....Chester, Pa.
 Shipowner's Dry Dock Co.....Chicago.
 Smith & Son, Abram.....Algonac, Mich.
 Willard, Chas. P. & Co.....Chicago.

SHIP CHANDLERS.

Baker, Howard H. & Co.....Buffalo.
 Marine Mfg. & Supply Co.....New York.
 Upson-Walton Co.....Cleveland.

SHIP DESIGNERS.

Kidd, Joseph.....Duluth.
 Kreef & Parsons.....Chicago.
 Matteson & Drake.....Buffalo.
 Rice & Lovejoy.....Buffalo.
 Steel, Nacey & Hynd.....Cleveland.
 Wood, W. J.....Chicago.

SHIP LANTERNS AND LAMPS.

Russell & Watson.....Buffalo.

SHIP TIMBER.

Martin-Barriss Co.....Cleveland.

SMOOTH-ON COMPOUND, FOR REPAIRS.

Smooth-On Mfg. Co.....Jersey City, N. J.

STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.

Falls Hollow Staybolt Co.....Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.

Gilchrist & Co., C. P.....Cleveland.
 Holmes, Samuel.....New York.
 Lester, S. S.....Quebec, Can.
 McCarthy, T. R.....Montreal, Can.

STEAMSHIP LINES, PASS. AND FREIGHT.

American Line.....New York.
 Anchor Line.....Buffalo.
 Boston Steamship Co.....Boston.
 Cleveland & Buffalo Transit Co.....Cleveland.
 Detroit & Cleveland Line.....Cleveland.
 Erie & Western Trans. Co.....Buffalo.
 Goodrich Trans. Co.....Chicago.
 International Mercantile Marine Co.....Philadelphia.
 Manitou Steamship Co.....Chicago.
 Mexican-American S. S. Co.....New Orleans, La.
 New York & Cuba Mail S. S. Co.....New York.
 Niagara, St. Catharines & Toronto Ry. & Nav. Co.....St. Catharines, Ont.
 Northern Michigan Trans. Co.....Chicago.
 Red Star Line.....New York.
 Richelieu & Ontario Nav. Co.....Montreal, Can.
 United Fruit Co.....Boston.

STEEL CASTINGS.

Macbeth Iron Co.....Cleveland.
 Otis Steel Co.....Cleveland.

STEERING APPARATUS.

American Ship Building Co.....Cleveland.
 Chase Machine Co.....Cleveland.
 Dake Engine Co.....Grand Haven, Mich.
 Detroit Ship Building Co.....Detroit.
 Hyde Windlass Co.....Bath, Me.
 Jenks Ship Building Co.....Port Huron, Mich.
 Marine Mfg. & Supply Co.....New York.
 Moulton Steering Engine Co.....New York.
 Pawling & Harnischfeger.....Milwaukee.
 Sheriffs Mfg. Co.....Milwaukee.

SUBMARINE DIVING APPARATUS.

Morse & Son, A. J.....Boston.
 Schrader's Son, A.....New York.

SURVEYORS, MARINE.

Gaskin, Edward.....Buffalo.
 Hynd, Alexander.....Cleveland.
 Lovejoy, H. O.....Buffalo.
 Matteson & Drake.....Philadelphia.
 Parker Bros. Co., Ltd.....Detroit.
 Nacey, James.....Cleveland.
 Rice, Henry.....Buffalo.
 Steel, Adam.....Cleveland.
 Wood, W. J.....Chicago.

TESTS OF MATERIALS.

Hunt, Robert W. & Co.....Chicago.

TILING, INTERLOCKING RUBBER.

New York Belting & Packing Co.....New York.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.

Allen, John F.....New York.
 Watson-Stillman Co.....New York.

TOOLS, WOOD WORKING.

Atlantic Works, Inc.....Philadelphia.

TOWING MACHINES.

American Ship Windlass Co.....Providence, R. I.
 Chase Machine Co.....Cleveland.

TOWING COMPANIES.

Donnelly Salvage & Wrecking Co.....Kingston, Ont.
 Great Lakes Towing Co.....Cleveland.
 Midland Towing & Wrecking Co., Ltd.....Midland, Ont.

TRAPS, STEAM.

Kieley & Mueller.....New York.
 Lunkenheimer Co.....Cincinnati.
 Sturtevant Co., B. F.,.....Hyde Park, Mass.

TRUCKS.

Boston & Lockport Block Co.....Boston.

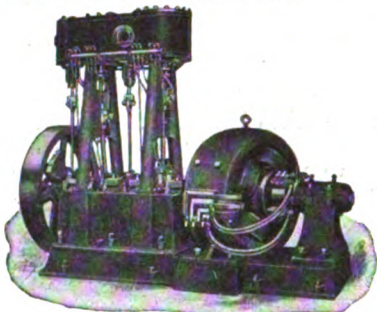
TUBING, SEAMLESS.

Shelby Steel Tube Co.....Pittsburg, Pa.

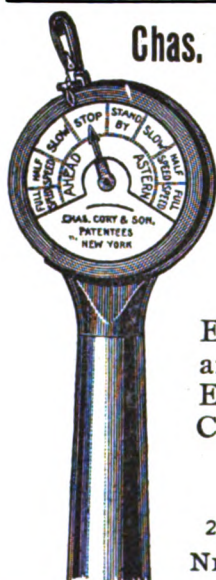
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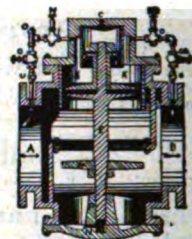
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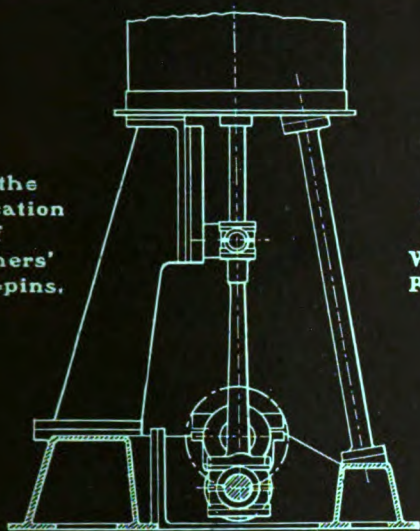
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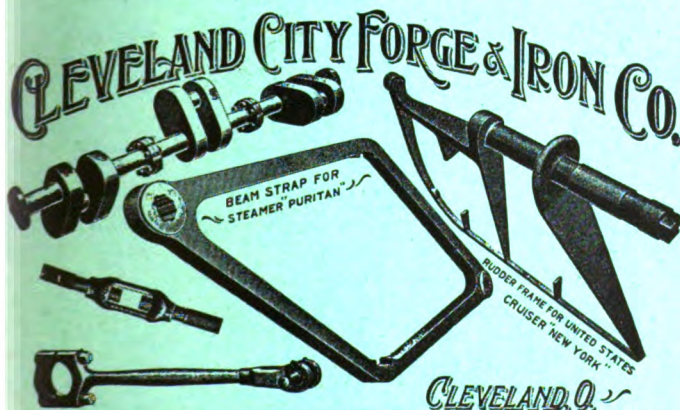
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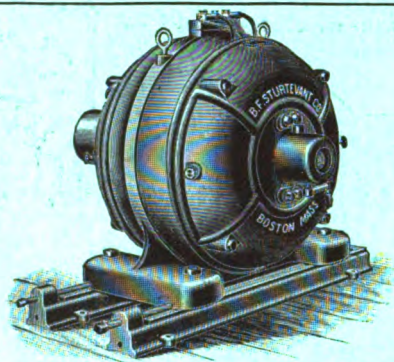
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Eastward	Arrive from West	Depart East
No. 18, Southwestern Limited	*1:50 a.m.
No. 22, Lake Shore Limited	*2:12 a.m.	*2:20 a.m.
No. 20, Chicago and Cleveland Exp.	*7:20 a.m.	.....
No. 28, New York and Boston Exp.	*7:40 a.m.	*8:00 a.m.
No. 40, Toledo and Buffalo Accom. ..	†10:00 a.m.	†10:30 a.m.
No. 32, Fast Mail	*11:25 a.m.	*11:30 a.m.
No. 48, Accommodation via Sandusky ..	†1:40 p.m.	.....
No. 42, Boston-New York Express ..	.....	*11:45 a.m.
No. 44, Cleveland and New York Spl. ....	.....	*3:00 p.m.
No. 46, Southwestern Express .....	.....	*3:10 p.m.
No. 116, Ashtabula Accommodation. ....	.....	†4:30 p.m.
No. 6, Limited Fast Mail	*5:40 p.m.	*5:45 p.m.
No. 26, 20th Century Limited	*7:40 p.m.	*7:43 p.m.
No. 10, Chicago, N.Y. & Boston Spl.	*7:30 p.m.	*7:50 p.m.
No. 16, New England Express	*10:30 p.m.	*10:35 p.m.
No. 2, Day Express	†9:10 p.m.	†9:25 p.m.
No. 126, Norwalk Accommodation ..	†7:55 a.m.	.....
Westward	Arrive from East	Depart West
No. 7, Exposition Limited	*12:50 a.m.	.....
No. 11, Southwestern Limited	*2:55 a.m.	.....
No. 9, Day Express .....	.....	†6:10 a.m.
No. 15, Boston and Chicago Special.	*3:10 a.m.	*3:15 a.m.
No. 19, Lake Shore Limited	*7:15 a.m.	*7:25 a.m.
No. 23, Western Express	*10:30 a.m.	*10:35 a.m.
No. 29, Southwestern Special	†11:10 a.m.	.....
No. 33, Southwestern Express	*12:25 p.m.	.....
No. 133, Cleveland and Detroit Exp. ....	.....	*12:45 p.m.
No. 47, Accommodation	†11:00 a.m.	†3:00 p.m.
No. 141, Sandusky Accommodation ..	.....	†3:10 p.m.
No. 43, Fast Mail	*4:35 p.m.	*4:40 p.m.
No. 127, Norwalk Accommodation ..	.....	†5:10 p.m.
No. 37, Pacific Express	*6:50 p.m.	*7:20 p.m.
No. 3, Fast Mail Limited	*10:50 p.m.	*10:55 p.m.
No. 115, Ashtabula Accommodation.	*8:30 a.m.

*Daily. †Except Sunday. ‡Except Monday.
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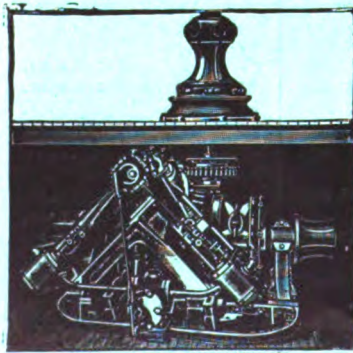
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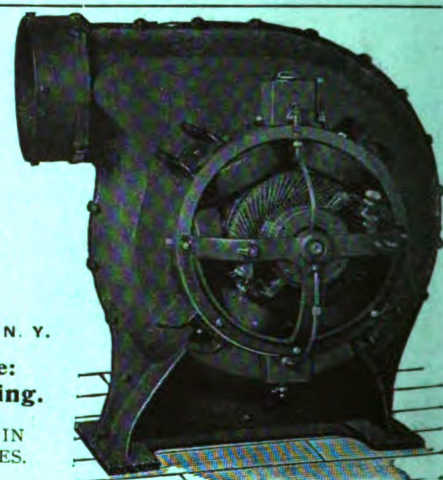
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